



*"Our mission is to upgrade and maintain  
a safe and efficient road system"*

## **GRAND TRAVERSE COUNTY ROAD COMMISSION 2024 Countywide Special Pavement Marking Program**

**CONTRACT # 24E402**

January 2, 2024



"Our mission is to upgrade and maintain  
a safe and efficient road system"

#### 24E402 2024 Countywide Special Pavement Marking Program – SCHEDULE OF ITEMS

PayItemCode	Description	Quantity	Units
1100001	Mobilization, Max, 5%	1	LSUM
8110093	Pavt Mrkg, Polyurea, 6 inch, Crosswalk	696	Ft
8110110	Pavt Mrkg, Polyurea, 12 inch, Crosswalk	1,448.00	Ft
8110114	Pavt Mrkg, Polyurea, 24 inch, Stop Bar	482	Ft
8110198	Pavt Mrkg, Thermopl, 6 inch, White	60	Ft
8110343	Rem Spec Mrkg	1,182.00	Sft
8110405	Pavt Mrkg, Polyurea, Lt Turn Arrow Sym	9	Ea
8110410	Pavt Mrkg, Polyurea, Only	2	Ea
8110411	Pavt Mrkg, Polyurea, Railroad Sym	8	Ea
8110412	Pavt Mrkg, Polyurea, Rt Turn Arrow Sym	9	Ea
8110414	Pavt Mrkg, Polyurea, School	2	Ea
8110417	Pavt Mrkg, Polyurea, Thru and Rt Turn Arrow Sym	2	Ea
8110450	Recessing Pavt Mrkg, Longit	29,910.00	Ft
8110451	Recessing Pavt Mrkg, Transv	2,508.00	Sft
8112114	Pavt Mrkg, Wet Reflective Polyurea, 4 inch, White	28,601.00	Ft
8112117	Pavt Mrkg, Wet Reflective Polyurea, 4 inch, Yellow	57,888.00	Ft
8112159	Scarification, for Polyurea Spec Mrkg	1,800.00	Sft
8127051	_Temporary Traffic Control	1	LSUM

# GRAND TRAVERSE COUNTY ROAD COMMISSION

## TABLE OF CONTENTS

COVER SHEET.....	1
SCHEDULE OF ITEMS.....	2
TABLE OF CONTENTS.....	3
ADVERTISEMENT FOR BID .....	4
INSTRUCTIONS TO BIDDERS .....	6
CONSTRUCTION CONTRACT .....	15
GENERAL SPECIFICATIONS .....	23
PROGRESS CLAUSE.....	36
SPECIAL PROVISIONS.....	37
LOG OF PROJECT .....	87
SPECIAL DETAILS.....	90
BID FORM .....	142
BID BLANK.....	147
AFFADAVIT OF NON-COLLUSION .....	149

## ADVERTISEMENT FOR BIDS

### 24E402 2024 Countywide Special Pavement Marking Program

#### GRAND TRAVERSE COUNTY ROAD COMMISSION

Sealed Proposals on forms prepared by the Engineer will be received by GRAND TRAVERSE COUNTY ROAD COMMISSION at 1881 LAFRANIER ROAD, TRAVERSE CITY, MI 49696-8911 until **1:30 PM. (local time) on January 22, 2024** for construction of the 2024 Countywide Long Line Pavement Marking Program in accordance with Plans, Specifications and other Contract Documents prepared by GRAND TRAVERSE COUNTY ROAD COMMISSION. Proposals will be publicly opened and read immediately after the time established above.

Project Location: Various Routes, Grand Traverse County

Principal items of work include, but are not limited to:

	1	LSum
Pavt Mrkg, Polyurea, 6 inch, Crosswalk	696	Ft
Pavt Mrkg, Polyurea, 24 inch, Stop Bar	482	Ft
Pavt Mrkg, Wet Reflective Polyurea, 4 inch, White	28,601	Ft
Pavt Mrkg, Wet Reflective Polyurea, 4 inch, Yellow	57,888	Ft
Rem Spec Mrkg	1,182	Sft
Pavt Mrkg, Polyurea, Lt Turn Arrow Sym	9	Ea
Pavt Mrkg, Polyurea, Rt Turn Arrow Sym	9	Ea
Pavt Mrkg, Polyurea, Thru and Rt Turn Arrow Sym	2	Ea
Pavt Mrkg, Polyurea, Only	2	Ea
Pavt Mrkg, Polyurea, School	2	Ea
Pavt Mrkg, Polyurea, 12 inch, Crosswalk	1,448	Ft
Recessing Pavt Mrkg, Longit	29,910	Ft
Recessing Pavt Mrkg, Transv	2,508	Sft
Scarification, for Polyurea Special Mrkg	1,800	Sft
Pavt Mrkg, Polyurea, Railroad Sym	8	Ea
Pavt Mrkg, Thermpl, 6 inch, White	60	Ft
Temporary Traffic Control	1	Lsum

Plans, Specifications, and other Contract Documents may be examined at the following location.

- GRAND TRAVERSE COUNTY ROAD COMMISSION; Traverse City, Michigan

Plans, Specifications and other Contract Documents may be obtained upon application at the office of GRAND TRAVERSE COUNTY ROAD COMMISSION, upon the payment of \$60.00 per set plus \$10.00 per set if mailed. Plans and specifications will not be mailed until payment is received. The non-refundable fee shall be in check form and shall be drawn payable to GRAND TRAVERSE COUNTY ROAD COMMISSION. The OWNER's address is GRAND TRAVERSE COUNTY

ROAD COMMISSION, 1881 LAFRANIER ROAD, TRAVERSE CITY, MI 49696-8911 and the telephone number is 231-922-4848.

Each proposal shall be accompanied by an acceptable form of Bid Bond in an amount equal to at least five percent (5%) of the amount of the Proposal payable to GRAND TRAVERSE COUNTY ROAD COMMISSION as a guaranty that if the Proposal is accepted, the Bidder will execute the Contract and file acceptable Performance, Labor and Material Payment and Maintenance and Guarantee Bonds within **10** days after, and as a condition precedent to the award of the Contract.

The GTCRC reserves the right to reject any, all, or portions of the Proposals received, or to negotiate separately with any source whatsoever in any manner necessary to serve the best interest of the GRAND TRAVERSE COUNTY ROAD COMMISSION, and to waive any formality or technicality in any Proposal in the interest of the GTCRC.

## INSTRUCTIONS TO BIDDERS

### ARTICLE 1 - DEFINED TERMS

1.01 Terms used in these Instructions to Bidders will have the meanings indicated in the Construction Contract and the General Specifications. Additional terms used in these Instructions to Bidders have the meanings indicated below which are applicable to both the singular and plural thereof:

Bidder — The individual or entity who submits a Bid directly to the Road Commission.

Drawings or Plans — The terms drawing or plans as used in these documents may mean project specific drawing sheets, log scoping documents, or any other document setting forth the scope of the Work under the Contract.

Issuing Office — The office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.

Successful Bidder — The Bidder submitting a responsive Bid to whom the Road Commission (on the basis of the Road Commission's evaluation as hereinafter provided) makes an award.

### ARTICLE 2 - COPIES OF BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents in the number and for the fee, if any, stated in the Advertisement or Invitation to Bid shall be obtained from the Issuing Office. The fee is nonrefundable unless specifically stated otherwise in the proposal. Payment of the plan fee, and any applicable shipping charges must be received by the Issuing Office before copies of the Bidding Documents are issued. Before issuance of Bidding Documents, the name, address, email address, phone number and fax number of the person to whom the documents are issued shall be provided to the Issuing Office.

2.02 Complete sets of Bidding Documents obtained from the issuing office must be used in preparing Bids; the Road Commission does not assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.03 The Road Commission in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining Bids for the Work and do not confer a license or grant for any other use.

### ARTICLE 3 - QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder's qualifications to perform the Work, Bidder shall submit written evidence such as financial data, previous experience, present commitments, and such other data as may be called for below.

- A. List of related project experience complete with dollar value of contract, type of work, project owner and project owner's representative and phone number.
- B. Current work now under contract or anticipated during the life of the project. Include project name, type, dollar value, completion date and percentage presently complete.
- C. Equipment list. Provide list of construction equipment presently owned and/or leased along with the equipment intended to be used on the project.
- D. List of suppliers and subcontractors.
- E. Bid Bond.
- F. Bidder Qualification Statement with supporting data.
- G. Affidavit of Non-Collusion.

#### **ARTICLE 4 - EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE**

4.01 On request, the Road Commission will provide Bidder access to the Site to conduct examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies. A Right of Way Permit may be required for work within the Right of Way as a condition to access. Any fees for the Right of Way Permit will be waived by the Road Commission.

4.02 It is the responsibility of each Bidder before submitting a Bid to:

- A. examine and carefully study the Bidding Documents, including any Addenda and the other related data identified in the Bidding Documents;
- B. visit the Site and become familiar with and satisfy Bidder as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;
- C. become familiar with and satisfy Bidder as to all federal, state, and local laws, rules, codes, and regulations that may affect cost, progress, or performance of the Work;
- D. carefully study all reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided by the Road Commission, if any, and carefully study all reports and drawings of a Hazardous Environmental Condition, if any, at the Site which have been identified in the Supplementary Conditions.
- E. obtain and carefully study (or assume responsibility for doing so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data

concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the materials, means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including any specific materials, means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents, and safety precautions and programs incident thereto;

- F. agree at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price bid and within the times and in accordance with the other terms and conditions of the Bidding Documents;
- G. become aware of the general nature of the work to be performed by the Road Commission and others at the Site that relates to the Work as indicated in the Bidding Documents;
- H. correlate the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents;
- I. promptly give the Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder; and
- J. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.

4.03 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific materials, means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

## ARTICLE 5 - PRE-BID CONFERENCE

A mandatory pre-bid conference **will not** be required on this Project.

5.01 ~~A pre-bid conference will be held on \_\_\_\_\_ at the Grand Traverse County Road Commission. Representatives of the Road Commission will be present to discuss the Project. Bidders are required to attend and participate in the conference. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary~~

~~in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.~~

## ARTICLE 6 - SITE AND OTHER AREAS

6.01 The Site is identified in the Bidding Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by Contractor.

## ARTICLE 7 - INTERPRETATIONS AND ADDENDA

7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to the Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda mailed, emailed, or delivered to all parties recorded by Engineer as having received the Bidding Documents. Questions received less than 3 days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

7.02 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by the Road Commission or the Engineer.

## ARTICLE 8 - BID SECURITY – A Bid security **will** be required for this Project.

8.01 A Bid must be accompanied by Bid security made payable to the Road Commission in an amount of 5% of Bidder's maximum Bid price and in the form of a certified or bank check, money order or a Bid Bond on an AIA form issued by a surety meeting the requirements of paragraph 6 of the General Specifications.

8.02 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract Documents, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 10 days after the Notice of Award, the Road Commission may annul the Notice of Award and the Bid security of that Bidder will be forfeited. The Bid security of other Bidders whom the Road Commission believes to have a reasonable chance of receiving the award may be retained by the Road Commission until the earlier of 7 days after the Effective Date of the Agreement or 30 days after the Bid opening, whereupon Bid security furnished by such Bidders will be returned.

8.03 Bid security of other Bidders whom the Road Commission believes do not have a reasonable chance of receiving the award will be returned within 15 days after the Bid opening.

## ARTICLE 9 - CONTRACT TIMES

9.01 The number of days within which, or the dates by which, the Work is to be (a) Substantially Completed and (b) also completed and ready for final payment are set forth in the Contract.

## ARTICLE 10 - LIQUIDATED DAMAGES

10.01 Provisions for liquidated damages, if any, are set forth in the Contract.

## ARTICLE 11 - SUBSTITUTE AND "OR-EQUAL" ITEMS

11.01 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration of possible substitute or "or-equal" items. Whenever it is specified or described in the Bidding Documents that a substitute or "or-equal" item of material or equipment may be furnished or used by Contractor if acceptable to the Road Commission, application for such acceptance will not be considered by the Engineer until after the Effective Date of the Agreement. The procedure for submission of any such application by Contractor and consideration by Engineer is set forth in the General Specifications and may be supplemented in the General Requirements.

## ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

12.01 A bid must be accompanied by a list of the subcontractors, suppliers, individuals, or entities proposed for the Work. Such list shall include the portion of the work the subcontractor will be performing and shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such subcontractor, supplier, individual, or entity. If the Road Commission, after due investigation, has reasonable objection to any proposed subcontractor, supplier, individual, or entity, the Road Commission may, before the Notice of Award is given, request the apparent Successful Bidder to submit a substitute, without an increase in the Bid.

12.02 If the apparent Successful Bidder declines to make any such substitution, the Road Commission may award the Contract to the next lowest Bidder that proposes to use acceptable subcontractors, suppliers, individuals, or entities. Declining to make requested substitutions will not constitute grounds for forfeiture of the Bid security of any Bidder. Any subcontractor, supplier, individual, or entity so listed and against which the Road Commission makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to the Road Commission subject to revocation of such acceptance after the Effective Date of the Agreement as provided in the General Specifications.

12.03 Contractor shall not be required to employ any subcontractor, supplier, individual, or entity against whom Contractor has reasonable objection.

## ARTICLE 13 - PREPARATION OF BID

- 13.01 The Bid form is included with the Bidding Documents. Additional copies may be obtained from the issuing office.
- 13.02 All blanks on the Bid form shall be completed by printing in ink or by typewriter and the Bid signed. A Bid price shall be indicated for each [section, Bid item, alternative, adjustment unit price item, and unit price item] listed therein, or the words "No Bid," "No Change," or "Not Applicable" entered.
- 13.03 A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown below the signature.
- 13.04 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be shown below the signature.
- 13.05 A Bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm must be shown below the signature.
- 13.06 A Bid by an individual shall show the Bidder's name and official address.
- 13.07 A Bid by a joint venture shall be executed by each joint venturer in the manner indicated on the Bid form. The official address of the joint venture must be shown below the signature.
- 13.08 All names shall be typed or printed in ink below the signatures.
- 13.09 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid form.
- 13.10 The address, email, and telephone number for communications regarding the Bid shall be shown.

## ARTICLE 14 - BASIS OF BID; EVALUATION OF BIDS

### 14.01 Unit Price

Bidders shall submit a Bid on a unit price basis for each item of Work listed in the Bid schedule.

The total of all Bid prices will be determined as the sum of the products of the estimated quantity of each item and the unit price Bid for the item. The final quantities and Contract Price will be determined as follows:

1. For all Unit Price Work, initially the Contract Price will be deemed to include an amount equal to the sum of the Unit Price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by the Road Commission pursuant to the General Specifications.
2. Each Unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
3. Discrepancies between the multiplication of units of Work and Unit Prices will be resolved in favor of the Unit Prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.

Bidders shall submit a Bid on a Unit Price basis for the base Bid and include a separate price for each alternate described in the Bidding Documents as provided in the Bid form, if any. The price for each alternate will be the amount added to or deleted from the base Bid if the Road Commission selects the alternate. In the evaluation of Bids, alternates will be applied in the same order as listed in the Bid form.

## ARTICLE 15 - SUBMITTAL OF BID

15.01 Bids may be submitted by either completing the Bid forms in the bound documents provided or by completing copies made from the Bid forms in the documents provided. A Bid shall include the completed Bid form, Bid security and other material identified for inclusion with the Bid.

15.02 A Bid must be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to Bid and shall be enclosed in an opaque sealed envelope plainly marked with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate envelope plainly marked on the outside with the notation "BID ENCLOSED." A

mailed Bid shall be addressed to GRAND TRAVERSE COUNTY ROAD COMMISSION, 1881 LAFRANIER ROAD, TRAVERSE CITY, MI 49696-8911.

15.03 Bids submitted by facsimile, email, in any another electronic form will not be considered.

#### ARTICLE 16 - MODIFICATION AND WITHDRAWAL OF BID

16.01 A Bid may be modified or withdrawn by an appropriate document duly executed in the manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids.

16.02 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with the Road Commission and promptly thereafter demonstrates to the reasonable satisfaction of the Road Commission that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

#### ARTICLE 17 - OPENING OF BIDS

17.01 Bids will be opened at the time and place indicated in the advertisement or invitation to Bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

#### ARTICLE 18 - BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid form, but the Road Commission may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

#### ARTICLE 19 - AWARD OF CONTRACT

19.01 The Road Commission reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. The Road Commission further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to be non-responsible. The Road Commission may also reject the Bid of any Bidder if the Road Commission believes that it would not be in the best interest of the Project to make an award to that Bidder. The Road Commission also reserves the right to waive any or all formalities or nonconformities, and to negotiate contract terms with the Successful Bidder. Any such waiver shall not affect the validity of the Contract or affect the right of the Road Commission to enforce any provision of the Contract.

By submitting this Bid, the Bidder waives any and all claims against the Road commission related to the Road Commission's selection of the Successful Bidder.

- 19.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.
- 19.03 In evaluating Bids, the Road Commission will consider whether the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.
- 19.04 In evaluating Bidders, the Road Commission will consider the qualifications of Bidders and may consider the qualifications and experience of subcontractors, suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of subcontractors, suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions.
- 19.05 The Road Commission may conduct such investigations as the Road Commission deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed subcontractors, suppliers, individuals, or entities to perform the Work in accordance with the Contract Documents.
- 19.06 If the Contract is to be awarded, the Road Commission will award the Contract to the Bidder whose Bid is in the best interests of the Project and the Road Commission.

## ARTICLE 20 - CONTRACT SECURITY AND INSURANCE

- 20.01 Paragraphs 5 and 6 of the General Specifications, as may be modified by the Supplementary Conditions, set forth the Road Commission's requirements as to Bonds and Insurance. When the Successful Bidder delivers the executed Agreement to the Road Commission, it must be accompanied by such Bonds and Insurance.

## ARTICLE 21 - SIGNING OF AGREEMENT

- 21.01 When the Road Commission gives a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement with the other Contract Documents which are identified in the Agreement as attached thereto. Within 7 days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to the Road Commission. The Road Commission shall deliver one fully signed counterpart to Successful Bidder with a complete set of the Drawings with appropriate identification.

**GRAND TRAVERSE COUNTY ROAD COMMISSION  
CONSTRUCTION CONTRACT**

PROJECT: 24E402 2024 Countywide Special Pavement Marking Program

LOCATION: Various routes, Grand Traverse County Michigan

THIS CONTRACT is made this \_\_\_\_\_ day of \_\_\_\_\_, 2024, by and between GRAND TRAVERSE COUNTY ROAD COMMISSION, a quasi-municipal corporation and a duly organized County Road Commission in the State of Michigan, of 1881 LaFranier Road, Traverse Road Commission, Michigan 49696 (the "Road Commission") and \_\_\_\_\_, a corporation, whose address is \_\_\_\_\_, (the "Contractor");

WHEREAS, the parties wish to accomplish improvements at the above location (the "Site") and have solicited and submitted a bid for such improvements;

THEREFORE, the parties mutually agree as follows:

1. Contract Documents. The following designated documents shall be deemed to be a part of this Contract:
  - Advertisement
  - Information to Bidders
  - Instructions to Bidders
  - Affidavit of Non-Collusion
  - Bid
  - Legal Status of Bidder
  - Performance Bond with maintenance and guarantee obligations
  - Payment Bond
  - Notice of Award
  - Notice to Proceed
  - Authorization of Change(s)
  - Work Item Descriptions
  - General Specifications
  - Supplemental Specifications
  - Special Provisions
  - MDOT Frequently Used Special Provisions
  - Plans and Details
  - Progress Clause and Schedule
  - Contractor Safety Plan
  - Pre-Construction Meeting Minutes
  - Reports

– Michigan Department of Transportation Standard Specifications for Construction

Where sections of the MDOT Standard Specifications for Construction are incorporated by reference in the applicable Contract Documents, the term "Department" as used in the MDOT Standard Specifications for Construction shall mean the "Road Commission."

– Grand Traverse County Road Commission Standards and Specifications  
– Addenda

2. **Performance**. Contractor agrees to perform the work as specified in the Contract Documents.
3. **Progress Clause**. The services to be rendered under this Contract shall commence upon issuance of the Notice to Proceed. The Contract working time, substantial completion date and final completion date shall be as provided in the Progress Clause.
4. **Contract Price**. The Road Commission agrees to pay the Contractor the Unit Prices provided in the attached bid(s), specifications and other Contract Documents in the time and manner therein provided. The total estimated price for all Work described herein shall be \_\_\_\_\_, more or less, to be paid pursuant to the procedures established in the Contract documents.
5. **Independent Contractor**. The relationship of the Contractor to the Road Commission is that of an independent contractor and in accordance therewith, the Contractor covenants and agrees to conduct itself consistent with such status and that neither it nor its employees, officers or agents will claim to be an officer, employee or agent of the Road Commission or make any claim, demand or application to or for any rights or privileges applicable to any officer or employee of same, including but not limited to worker's compensation coverage, unemployment insurance benefits, social security coverage, or retirement membership or credit. The parties do not intend the services provided by the Contractor to be a joint venture.
6. **Recovery of Money**. Whenever, under this Contract, any sum of money shall be recoverable from or payable by the Contractor to the Road Commission, the same amount may be deducted from any sum due to the Contractor under this Contract or under any other contract between the Contractor and the Road Commission. The rights of the Road Commission are in addition and without prejudice to any other right the Road Commission may have to claim the amount of any loss or damage suffered by the Road Commission on account of the acts or omissions of the Contractor.
7. **General Warranty and Guarantee**. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. For one year after the date of final payment, the Contractor shall maintain and repair the Work. Any Work which is found to be defective shall promptly and without cost to the Road Commission and in accordance with the Road Commission's written instructions, be corrected or

replaced with non-defective Work. If the Road Commission determines that Work must be replaced, the Contractor shall promptly replace the Work. If the Contractor believes that replacement of the Work was unreasonable and only repair of the Work should have been ordered by the Road Commission, the Contractor may submit a written request with the Road Commission for the difference in cost, and, if the Road Commission disagrees with said request, may pursue such request in accordance with the dispute resolution procedure established in this Contract. If the Contractor does not promptly repair or replace the Work pursuant to the Road Commission's directions, the Road Commission may itself correct the defective Work or may have the defective Work corrected by another contractor. The Contractor shall pay all of the Road Commission's costs and expenses, including Road Commission overhead costs and attorney fees associated with the repair or replacement of the defective Work. Where defective Work has been corrected or removed and replaced under this paragraph, the correction period with respect to such Work will be extended for an additional term of one year after such correction or removal and replacement has been completed. These obligations are in addition to any other obligation provided by law or this Contract or warranty.

None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a waiver of Contractor's obligation to perform the Work in accordance with the Contract Documents:

- A. observation or failure to observe by the Road Commission, its agents, or employees;
- B. payment by the Road Commission of any progress payment;
- C. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Road Commission;
- D. use or occupancy of the Work or any part by the Road Commission;
- E. any acceptance by the Road Commission, its agents, or employees or any failure to do so;
- F. any inspection or test by the Road Commission, its agents, or employees;
- G. approval by others; or
- H. any correction of defective Work by the Road Commission.

8. Qualifications of the Contractor. The Contractor specifically represents and agrees that its officers, employees, agents and consultants have and shall possess the experience, knowledge, and competence necessary to qualify them individually for the particular duties they perform hereunder and to perform the Work.

- The Contractor must be pre-qualified by the Michigan Department of Transportation for the Work to be performed under this Contract.

9. **Notice.** Whenever it is provided in this Contract that a notice or other communication is to be given or directed to either party, the same shall be given or directed to the respective party at its address as specified in this Contract, or at such other address as either party may, from time to time, designate by written notice to the other.

10. **Termination.** This Contract may be terminated in accordance with the provisions of subsections 108.11 and 108.12 of the MDOT Standard Specifications for Construction.

11. **Dispute Resolution.** If any party has a dispute with another arising out of or relating to the meaning, operation or enforcement of this Contract or any provision of this Contract or any of the applicable Contract Documents, the disputing parties will attempt in good faith to resolve any such dispute promptly by negotiations between the Contractor and the Engineer. Any party may give the other party written notice of any dispute not resolved in the normal course of business. Within 20 days after delivery of the notice, the Contractor and the Engineer will meet at a mutually acceptable time and place, and thereafter as often as they reasonably deem necessary, to exchange relevant information and to attempt to resolve the dispute. All negotiations pursuant to this clause are confidential and will be treated as compromise and settlement negotiations for purposes of the Federal Rule of Evidence and Michigan Rules of Evidence. If the matter has not been resolved within 60 days of the disputing party's notice or if the parties fail to meet within 20 days, either party may initiate mediation of the controversy or claim as provided below.

A. **Mediation.** If the dispute has not been resolved by negotiation as above, the parties will endeavor to settle it by mediation and shall utilize the services of a mutually acceptable neutral mediator, who meets the qualifications of MCR 2.411(F), to bring them together in at least one mediation session. The entire mediation process will be confidential, and the parties and the mediator will not disclose to any person who is not associated with participants in the process any information regarding the process, contents, settlement terms, or outcome of the proceeding. The mediation will be treated as a compromise negotiation within the meaning of the Federal Rules of Evidence and the Michigan Rules of Evidence.

B. **Arbitration.** Any dispute arising out of or relating to this Contract or the applicable Contract Documents or their breach that has not been resolved by negotiation or mediation within time frame set forth below will be finally settled by binding arbitration conducted expeditiously in accordance with the rules of the American Arbitration Association (AAA) by a sole arbitrator. The arbitration will take place in Grand Traverse County, Michigan, and will be governed by the Federal Arbitration Act, 9 USC 1-

16, and judgment on the award rendered by the arbitrator may be entered by any court having jurisdiction. The arbitration will be governed by the laws of the State of Michigan. The arbitrator is not empowered to award damages in excess of compensatory damages or any lawful limitations on damages provided in this Contract or the applicable Contract Documents.

The procedures specified in this section will be the sole and exclusive procedures for the resolution of disputes between the parties arising out of or relating to this Contract and/or the applicable Contract Documents; however, a party may seek a preliminary injunction or other provisional jurisdictional relief if in its judgment such action is deemed necessary to avoid irreparable damage or to preserve the status quo. Despite such action the parties will continue to participate in good faith in the procedures specified in this section.

- C. Venue. All meetings, hearings and actions to resolve the dispute shall be in Grand Traverse County.
- D. Notice. Written notice of a dispute shall be given to the other party not later than 90 days after the occurrence giving rise to the dispute becomes known or should have become known. Mediation shall occur within 120 days after such notice. Unless a longer time is agreed upon, arbitration must be demanded within 180 days after such notice and, if not, the claim is deemed waived. Arbitration must be demanded within this time limit even if negotiation or mediation has not occurred, but the arbitrator must direct the parties to mediation before issuing an award.
- E. Work Continuance and Payment. Unless otherwise agreed in writing, Contractor shall continue the Work and maintain the approved schedules during any dispute resolution proceedings. If Contractor continues to perform, the Road Commission shall continue to make payments in accordance with this Agreement.
- F. Emergency Injunctive Relief. Nothing in this Contract shall prohibit the Road Commission from seeking emergency injunctive relief from any court of competent jurisdiction, should the situation warrant it under MCR 3.310.
- G. Agent Dispute Resolution. Notwithstanding the above, at the option of the Road Commission, the Road Commission and the Contractor shall submit the following matters to a person with background, training, and experience in similar projects:
  - 1. To determine whether there has been a delay for reasons that were within the control of the Contractor, and the period of time that delay has been caused, continued, or aggravated by actions of the Contractor.

2. To determine whether there has been an unacceptable delay by the contractor in the performance of the remaining Work under the contract any time after 94% of the Work is in place.

The agent selected must be mutually agreeable to the Road Commission and the Contractor provided that the Road Commission and the Contractor can mutually agree within 10 days from the date of the dispute. In the event that the parties cannot agree, the agent shall be selected by the Road Commission. The agent shall not be an employee of either party. This process shall be governed by and subject to the provisions of MCL 125.1564(4) – (8).

12. Entire Contract. This Contract, together with all accompanying applicable Contract Documents and items incorporated herein by reference, constitutes the entire Contract of the parties and there are no valid promises, conditions or understandings which are not contained herein.
13. Amendments. This Contract may be modified from time to time, but such modifications shall be in writing and signed by both parties.
14. Interpretation. This Contract shall be governed by the laws of the State of Michigan, both as to interpretation and performance. This Contract was drafted at the joint direction of the parties. The pronouns and relative words used herein are written in the neuter and singular. However, if more than one person or entity joins in this Contract on behalf of Contractor, or if a person of masculine or feminine gender joins in this Contract on behalf of Contractor, such words shall be interpreted to be in the plural, masculine or feminine as the sense requires.

References to standards, specifications, manuals, or codes of any technical society organization, or association shall mean the standard, specification, manual, code, or law or regulation in effect at the time of opening the Bid or the date of this Agreement, whichever occurs first, except as otherwise stated or required by law or regulation. References to any law, rule, or regulation shall mean the law, rule, or regulation in effect at the time the Work or any portion thereof is performed by the Contractor.

15. Authority to Execute. The parties agree that the signatories appearing below have the authority and are duly authorized to execute this Contract on behalf of the party to the Contract.
16. Third Party Beneficiaries. This Contract confers no rights or remedies on any third party, other than the parties to this Contract and their respective successors and permitted assigns.

17. Reuse of Documents. All documents and electronic files delivered to the Road Commission are instruments of service in respect of the project. Nevertheless, all documents and electronic files delivered to the Road Commission shall become property of the Road Commission upon completion of the Work and payment in full of all monies due the Contractor. Copies of the Road Commission-furnished data that may be relied upon by the Contractor are limited to the printed copies (also known as hard copies) that are delivered to the Contractor. Files on electronic media of text, data or graphics or of other types that are furnished by the Road Commission to the Contractor are only for convenience of the Contractor. Any conclusion of information obtained or derived from such electronic files will be at the user's sole risk. Economic benefit to the Road Commission for having these files is predicated on the files being in media form, software release number and hardware operating system number as utilized by the Contractor. Copies of documents that may be relied upon by the Road Commission are limited to the printed copies (also known as hard copies) that are signed or sealed by the Contractor. Files on electronic media of text, data or graphics or of other types that are furnished by the Contractor to the Road Commission shall be in a compatible software format for use by the Road Commission. Any conclusions or information obtained or derived from such electronic files will be at the user's sole risk. Electronic file copies of drawings will not contain the Contractor's seal or the identification of the Contractor in the title block.
18. Digital Signatures. The parties hereto acknowledge and agree under the Uniform Electronic Transactions Act, MCL 450.832, *et seq.* that this Contract may be executed with the electronic signature of any person authorized and required to sign on behalf of the parties hereto.
19. Execution in Counterparts. This Contract may be executed in counterparts, each of which shall be an original and all of which shall constitute the same instrument.
20. No Waiver. No waiver by any party of any default by another party in the performance of any portion of this Contract shall operate or be construed as a waiver of any future default, whether like or different in character.
21. Costs and Expenses. Contractor shall be responsible for reasonable attorney fees and costs incurred by the Road Commission in connection with recovery under the bonds furnished by Contractor or any of its subcontractors under this Contract as well as any reasonable attorney fees and costs incurred by the Road Commission in connection with the Contractor's performance or failure to perform under this Contract. Costs that may be charged to the Contractor include, but are not limited to, all costs and expenses incurred by the Road Commission in connection with performing any portion of the Work that the Contractor fails and refuses to perform following notice to the Contractor. In case of an emergency, where in the opinion of the Engineer, delay would cause serious loss or damage, or presents a safety hazard to the traveling public, corrective work may be undertaken without advance notice to Contractor, and Contractor shall be liable for all costs

and expenses incurred. The remedies set forth in this paragraph are cumulative of any other remedies the Road Commission may have.

IN WITNESS WHEREOF, the parties hereto have executed this Contract on the date and year first above written.

**CONTRACTOR**

By \_\_\_\_\_

Its \_\_\_\_\_

**GRAND TRAVERSE COUNTY ROAD COMMISSION**

By \_\_\_\_\_  
Joe Underwood, Chairperson

By: \_\_\_\_\_  
Kylie Carpenter, Clerk

APPROVED AS TO SUBSTANCE:

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Dan Watkins  
Road Commission Manager

APPROVED AS TO FORM:

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Karrie A. Zeits  
Road Commission General Counsel

**GRAND TRAVERSE COUNTY ROAD COMMISSION  
GENERAL SPECIFICATIONS**

**1. DEFINITIONS.**

For the purpose of these specifications, the following terms are used herein and are respectively defined as follows:

- A. "Road Commission" shall mean the Grand Traverse County Road Commission represented by the County Highway Engineer. Where sections of the MDOT Standard Specifications for Construction are incorporated by reference within the applicable Contract Documents, the term "Department" as used in the MDOT Standard Specifications for Construction shall mean the "Road Commission."
- B. "Engineer" shall mean the County Highway Engineer of the Road Commission.
- C. "Board" shall mean the Board of Grand Traverse County Road Commissioners.
- D. "Contractor" shall mean the individual, partnership, corporation or a combination of any or all jointly, undertaking the execution of the Work under the terms of the Contract and acting directly or through agents or employees.
- E. The Abbreviations provided under subsection 101.02 of the MDOT Standard Specifications for Construction and the Definitions provided under subsection 101.03 of the MDOT Standard Specifications for Construction are incorporated herein by reference.

**2. PERFORMANCE/MDOT STANDARD SPECIFICATIONS/CONTRACT DOCUMENTS.**

Unless a different form, procedure, provision, term, condition, method, or specification is provided within the Road Commission's Contract Documents, the Contractor and the Engineer shall adhere to and perform the Contract in accordance with the requirements set forth in Division 1, Sections 101 through 110, of the 2020 Michigan Department of Transportation Standard Specifications for Construction (the "MDOT Standard Specifications"). Subsection 104.10 of the MDOT Standard Specifications is specifically excluded and in no case shall the provisions of subsection 104.10 of the MDOT Standard Specifications apply to the Project.

If the Contractor believes a conflict, error, ambiguity, or discrepancy exists within the Contract Documents or between the Contract Documents and any provisions of any law or regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any supplier, Contractor shall report it to the Engineer in writing at once and request an amendment or supplement to the Contract documents by the Engineer. In the event that the Contractor proceeds with the Work without an amendment or supplement issued by the Engineer, Contractor shall assume all risk in performing the Work without such

amendment or supplement, which shall include but not be limited to the risk that the Work performed shall be required to be removed, replaced, or corrected by the Road Commission.

3. ENGINEER'S STATUS.

The Engineer will be the Road Commission's representative during construction of the Project. The Engineer shall have the authority as set forth in subsection 104.01 of the MDOT Standard Specifications for Construction.

4. SUBSURFACE AND PHYSICAL CONDITIONS

A. Reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been provided to the Contractor are as follows:

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B. Reports and drawings of a Hazardous Environmental Condition, if any, at the Site which have been provided to the Contractor are as follows:

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5. INSURANCE.

The Contractor is required to provide the following insurance. If any part of the Contract is sublet, insurance shall be provided by the Contractor on behalf of subcontractors to cover their operations. The insurance shall be contracted with a company licensed to do business in the State of Michigan and shall be subject to the approval of the Road Commission. Certified copies in duplicate, setting forth the limits and coverage shall be furnished to the Road Commission before commencing with any Work and at the time of executing this Contract. The policy shall contain endorsements stating that a 10 day notice will be given to the Road Commission prior to termination or any change in the policy, shall provide an endorsement stating that the Road Commission, its board, officers, employees, and agents have been named as additional insureds onto such policy for all claims arising out of the Contractor's Work, and shall describe the construction project and provide coverage for the following terms:

A. Contractor's General Liability and Property Damage. The Contractor shall procure and shall maintain during the life of this Contract Contractor's General Liability Insurance in an amount not less than \$2,000,000 per occurrence for personal injuries, bodily injuries and property damage; subject to a \$3,000,000 general aggregate. Contractor shall maintain Completed Products and Operations coverage in an amount not less than \$3,000,000. Coverage shall also include property damage for the following items:

1. Underground Damage to facilities due to drilling and excavating with mechanical equipment in streets and highways, easements or public property.

2. Collapse or Structural Injury to structures due to blasting or explosion, excavation, tunneling, pile driving or cofferdam Work.

It is understood and agreed that all coverages afforded are considered to be primary and any other insurance that the Road Commission may have in effect shall be considered secondary or excess.

B. Automobile Insurance. The Contractor shall procure and maintain during the life of this Contract Owned, Contract Hired and Non-Ownership Motor Vehicle Bodily Injury Insurance (comprehensive form) in an amount not less than \$500,000 for injuries, including accidental death for each person; and in an amount not less than \$1,000,000 for each accident; and Property Damage Liability Insurance in an amount not less than \$1,000,000 for each accident; and combined single limit for Bodily Injury and Property Damage Liability Insurance in an amount not less than \$1,000,000 for each occurrence. These requirements may be met through an Umbrella Policy.

C. Worker's Compensation. The Contractor shall comply with the requirements of the Michigan Worker's Compensation Law and shall maintain such insurance as will protect him from claims under said law, and from any other claim for personal injury, including death, which may arise from operations by himself or by any other Contractor, or anyone directly or indirectly employed by either of them, and will give proof of such insurance to the Road Commission Engineer at the time of filing its bonds and Contract.

D. Owner's (Road Commission's) Protective Liability. The Contractor shall furnish to the Road Commission an Owner's Protective Liability Policy insuring the Road Commission in an amount not less than \$1,000,000 per person and per occurrence for bodily injury and property damage.

E. Cancellation. If any of the insurance is canceled, the Contractor and all subcontractors shall cease operations, and shall not resume until new insurance is obtained.

6. **BONDS.**

The Contractor will be required to furnish surety bonds from a surety company with an A.M. Best rating of 'A' or better, U.S. Treasury Department listed and admitted to do business in the State of Michigan effective on the date the Notice to Proceed is issued.

The surety shall be acceptable to the Road Commission and shall be provided at the time this Contract is executed by the Contractor. Each bond shall be on the AIA Document A312 forms provided in accordance with the requirements set forth under subsections 102.15 and 102.16 of the MDOT Standard Specifications for Construction.

7. **PERMITS.**

The Contractor shall obtain all permits required for the Work by any federal, state, or local law, rule, code, or regulation. Contractor shall pay for same at Road Commission's own expense. Any inspection fees associated with such permits shall be paid for by the Contractor and Contractor shall conduct construction operations in accordance with provisions of such

permits including tunneling of utilities where reburied. Contractor shall also furnish any required bonds and pay the cost of same.

8. **PRE-CONSTRUCTION MEETING.**

A pre-construction meeting   **will not** be required. After the award of the Contract by the Road Commission, the Road Commission will organize and a principal member of the Contractor's organization and any other person or entities that the Road Commission requires shall attend a pre-construction meeting with all subcontractors to be held at a place and on a date mutually agreed upon. At this time, at a minimum, the requirements of the project, the Contractor's schedule of operations and construction methods, work zone traffic plan, and, if applicable, testing orders, job mix formula shall be provided. The Contract Documents shall be delineated in order to obtain an understanding of the overall construction program by the Contractor and subcontractors.

9. **SCOPE OF THE WORK - SUBJECT MATTER.** The Contractor, under penalty of bond, if applicable, attached, shall furnish all labor, materials, equipment and appliances suitable, capable, and necessary for the Work and do all the Work as set forth in the bid for the above project according to the specifications, plans, bids, bonds and other Contract documents which are or become a part of this Contract, in a manner, time and place as herein set forth.

It is the intent of the Contract Documents to describe a functionally complete Project to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract or from prevailing custom or trade usage as being required to produce the intended result will be provided at no additional cost to the Road Commission. The Scope of Work is referred to herein as the "Work" or the "Scope of Work."

10. **CONSTRUCTION PROGRESS SCHEDULE AND SAFETY PROGRAM.**

A. At the pre-construction meeting and prior to starting Work, the Contractor shall adhere to the requirements set forth in subsections 108.04 and 108.05 of the MDOT Standard Specifications for the preparation, submission, and any subsequent modification of the Progress Schedule. Upon approval of the Progress Schedule, and any modified Progress Schedule, by the Engineer in writing, it shall become a part of the Contract Documents. The Pre-construction meeting minutes approved by the Road Commission shall become a part of the Contract Documents.

B. No later than the pre-construction meeting and prior to starting Work, the Contractor shall submit a written Construction Safety Program and provide a Project Supervisor and a Safety Supervisor in accordance with the obligations set forth in subsection 104.07 of the MDOT Standard Specifications ("Contractor Obligations") Upon approval of the Construction Safety Program, it shall become a part of the Contract documents.

11. **CONTRACTOR'S SUPERVISION AND CONTROL OF THE WORK.**

A. The Road Commission and the Engineer shall have the authority set forth in subsections 104.01, 104.05, and 108.03 of the MDOT Standard Specifications. The Contractor shall adhere

to the requirements set forth in subsections 104.03, 104.04, 104.08, 104.09, 104.11, 104.12, and 108.03 of the MDOT Standard Specifications. If the Engineer determines that any worker employed by the Contractor or by any subcontractor, including the Project Supervisor or Safety Supervisor, does not perform the work in a proper and skillful manner or is intemperate or disorderly, the Engineer and the Contractor shall adhere to the procedure and requirements set forth in subsection 108.03 of the MDOT Standard Specifications for Construction.

B. Contractor shall be responsible for all costs incurred by the Road Commission, including attorney fees, in connection with Contractor's failure to properly adhere to the requirements incorporated in subparagraph 11.A. above or failure to be at the site of the Work on the dates or times indicated to the Road Commission without providing at least 12 hours' notice to the Road Commission.

**12. SUBCONTRACTING.**

A. Contractor shall not employ any subcontractor, supplier, or other individual or entity, whether initially or as a replacement, against whom the Road Commission may have reasonable objection. Contractor shall not be required to employ any subcontractor, supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

B. The Contractor must follow the written subcontracting procedures and requirements set forth in subsection 108.01 of the MDOT Standard Specifications for Construction, unless otherwise specified in the applicable Contract Documents, except that the subcontractors must be pre-qualified by the Michigan Department of Transportation to perform the classification of Work proposed.

C. When a portion of the Work which has been subcontracted by the Contractor is not being executed in a manner satisfactory to the Road Commission, the subcontractor shall be removed immediately on the request of the Engineer and shall not again be employed on the Work.

**13. PROTECTION OF WORK AND PROPERTY.**

A. The Contractor shall have the responsibility for the Work and adhere to the requirements set forth in subsections 107.01, 107.11, and 107.12 of the MDOT Standard Specifications and shall indemnify, defend and hold harmless the Road Commission from all such damages or injuries occurring because of Contractor's Work as provided under subsection 107.10.A. of the MDOT Standard Specifications.

B. The Contractor agrees to protect and restore public and private property damaged because of acts or omissions by the Contractor and the employees or agents of the Contractor in accordance with the requirements and procedures set forth in subsection 107.07 of the MDOT Standard Specifications for Construction. The Contractor shall assume full responsibility of loss or damage to the Work during the entire construction period resulting from conditions, and from all other causes whatsoever not directly due to the acts or neglect of the Road Commission, including fire, vandalism, flood, and malicious mischief, and shall turn the

finished Work over to the Road Commission in good condition and repair at the time of the request for a certificate of Substantial Completion.

C. Contractor shall provide the Road Commission with access to the site at all times during the project. No work performed by the Road Commission on the Project or at the Site shall be the basis for any claim of increased Contract Price or Contract Time under this Contract. Nor shall the Road Commission's performance of any of the Work under the Contract be the basis for a claim for damages or anticipated profits on the Work performed by the Road Commission. Further, the Contractor shall make available to the Road Commission any traffic control or other safety measures installed by the Contractor at the time the Road Commission performs any work at the site.

**14. LIMITATIONS ON USE OF SITE OR OTHER AREAS.**

A. The Road Commission or the Engineer may designate portions of the right-of-way or other Road Commission property on the plans as possible locations for storing materials in accordance with Section 104.12 of the MDOT Standard Specifications for Construction. The Contractor must store materials and restore locations used for storage in accordance with section 105.06 of the MDOT Standard Specifications for Construction.

B. Prior to substantial completion of the Work, Contractor shall clean the Site and make it ready for the Road Commission's use. At the completion of the Work before final acceptance by the Engineer, Contractor must complete the requirements set forth in subsection 104.07.D. of the MDOT Standard Specifications for Construction ("Final Cleanup"), the cost of which is included in the contract unit price for other pay items.

**15. CHANGES IN THE WORK.**

A. The Engineer shall have the right to require changes in or additions to the Work required by the Contract documents. The Engineer shall have the right to make any deductions for the Work. Revisions to the Contract and/or Specifications, if any, shall only occur in accordance with the requirements and procedure provided in subsection 103.02 of the MDOT Standard Specifications for Construction. If the Engineer and the Contractor do not agree as to whether one of the provisions under subsection 103.02 of the MDOT Standard Specifications for Construction applies, the Contractor is directed to proceed in accordance with the dispute resolution procedure established in the Road Commission Construction Contract. No request for change, addition, deduction, or adjustment of price, or extension of time for completion thereof, shall be made or allowed unless done pursuant to an order from the Engineer specifically authorizing such change, addition or deduction and, in the case of an addition of labor, materials, equipment and appliances, specifically setting forth the agreed upon price for the additional labor, materials, equipment and appliances. Contractor shall be assumed to have agreed to the terms and conditions of any Change Order 14 days following issuance by the Road Commission notwithstanding Contractor's failure to sign the Change Order. Where the order diminishes the quantity of Work to be done, this shall not constitute a basis for a claim for damages or anticipated profits on the Work that may be dispensed with.

B. Adjustments in the Contract Price, if any, because of any change, addition or deduction in the Work shall be determined as set forth in subsections 109.03, 109.05, and 109.06 of the MDOT Standard Specifications for Construction.

C. The Engineer will grant extensions of time without liquidated damages for the excusable delays for opening traffic and completing within the contract time on each of the bases provided under subsection 108.08 of the MDOT Standard Specifications for Construction. Any request for extension of time must be submitted and shall be determined as set forth in subsection 108.09 of the MDOT Standard Specifications for Construction. If the Contractor disagrees with the Engineer's denial of a request for an extension of time for any reason not explicitly covered elsewhere in the applicable Contract Documents, the Contractor must notify the Engineer in writing within 7 days after receipt of the Engineer's denial and must proceed in accordance with the dispute resolution procedure established the Road Commission Construction Contract.

D. It is understood and agreed that in case any change in, addition to, or deduction from the Work is required, said change shall in no way invalidate the Contract and shall not affect or discharge the bonds furnished by the Contractor. Further, no notice to the surety shall be required. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided herein. If the Contractor performs unauthorized work, the Engineer may direct the Contractor to remove and replace the unauthorized work at no additional cost to the Road Commission, as described and provided in subsection 104.05 of the MDOT Standard Specifications for Construction.

E. During the term of the Contract, the Road Commission may add locations to the Scope of the Work under this Contract by change order. Any additional locations added to the Scope of the Work and the plans and details and other specifications for the additional locations shall be deemed to be a part of this Contract and subject to the terms and conditions of this Contract and shall become a part of the Scope of the Work contemplated by this Contract following acceptance of the additional location(s) by the Contractor.

F. Any addition to the Work resulting in an increase in the Contract Price of more than 5% shall (1) be approved by the Board of County Road Commissioners for Grand Traverse County and (2) require the Contractor to obtain a rider to the Performance and Payment Bonds required under this Contract to increase the amount of the surety bonds unless this requirement is waived in writing by the Road Commission.

G. The Contractor may not make a request for an adjustment under the Contract after 28 days following the issuance of the Certificate of Substantial Completion to the Contractor by the Road Commission.

## 16. DIFFERING SITE CONDITION.

The Contractor represents that prior to submitting a bid, Contractor has conducted an examination of the plans, proposal, and work site in accordance with the requirements set forth

in subsection 102.04 of the MDOT Standard Specifications for Construction. As such, Contractor assumes the risk in encountering differing site conditions and all costs associated therewith. In the event that the Contractor encounters a differing site condition that materially and substantially causes an increase in the cost or time required for the performance of the Work, Contractor shall proceed in accordance with subsection 103.02.C. of the MDOT Standard Specifications for Construction. In no case shall the Contractor request any increase in Contract Time or Contract Price for work already performed nor may the Contractor stop or delay the Work because of the differing site condition. In the event that the Engineer denies the request, Contractor shall be obligated to perform the Work required under this Contract or otherwise proceed in accordance with the dispute resolution procedure established the Road Commission Construction Contract. This provision shall supersede and replace any differing site condition or similar provision contained in any incorporated standard or specification referenced in the Contract.

**17. SUBSTITUTES.**

Substitution may only be offered following the Notice of Award. Whenever an item of material or equipment is specified or described in the Contract documents by using the name of a proprietary item or the name of a particular supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification indicates that no like, equivalent, or “or-equal” item or no substitution is permitted, other items of material or equipment or material or equipment of other suppliers may be submitted to the Engineer for review. The Engineer in his or her sole discretion may allow the use of substitutes or “or-equal” material or equipment. The Engineer may require that the Contractor provide such assurances as the Engineer may determine are necessary to allow a proposed substitute or “or equal” item. The Contractor shall at its own expense provide all data in support of any proposed substitute or “or equal” material or equipment.

**18. SHOP DRAWINGS AND SAMPLES.**

The Contractor, the Road Commission, and the Engineer shall adhere to the provisions under subsection 104.02 of the MDOT Standard Specifications for Construction regarding Plans and Working Drawings and subsection 104.03 of the MDOT Standard Specifications for Construction regarding any deviations from such plans and working drawings. In case of conflict in the Contract Documents, the following establishes the order of precedence:

- A. All proposal material except the materials listed below;
- B. Special provisions;
- C. Supplemental specifications;
- D. Project plans and approved working drawings;
- E. Road Commission Standard Plans; and
- F. Road Commission General Specifications;
- G. MDOT Standard Plans;
- H. MDOT General Specifications.

Plan dimensions take precedence over calculated dimensions; calculated dimensions take precedence over scaled dimensions.

The Contractor must not take advantage of errors or omissions in the Contract or applicable Contract Documents and must immediately notify the Engineer when errors or omissions are discovered. If any errors, uncertainties, inconsistencies, omissions, or conflicts are discovered in the Contract or the applicable Contract Documents, the Engineer will determine the true intent of the Contract.

**19. INSPECTION OF CONSTRUCTION.**

The Contractor, the Road Commission, and the Engineer shall adhere to the provisions under subsections 104.01 and 109.07 of the MDOT Standard Specifications for Construction regarding inspection.

**20. ESTIMATES AND PAYMENTS.**

- A. The Engineer shall determine quantities of materials furnished and of work performed under the Contract in accordance with subsection 109.01 of the MDOT Standard Specifications for Construction. The Road Commission shall pay the Contractor for accepted quantities of pay items at the contract unit prices, and the Contractor must agree to accept such compensation as full payment, as provided under subsection 109.02 of the MDOT Standard Specifications for Construction. Payments for increased or decreased quantities, if any, shall be determined as provided under subsection 109.03 of the MDOT Standard Specifications for Construction.
- B. The Road Commission shall make progress payments in accordance with subsection 109.04 of the MDOT Standard Specifications for Construction.
- C. While the Work is being performed, the Contractor and the Road Commission or Road Commission's agent or representative shall confer daily on the quantity and amount of Work completed each day.
- D. Payment for contract revisions, if any, shall be made by the Road Commission in accordance with the provisions of subsection 109.05 of the MDOT Standard Specifications for Construction. The Contractor is not entitled to compensation for costs not specifically allowed or provided for in subsection 109.05 of the MDOT Standard Specifications for Construction, including but not limited to, the unrecoverable costs provided under subsection 109.05.G. of the MDOT Standard Specifications for Construction.
- E. Final inspection, final acceptance, and final payment shall be conducted in accordance with the provisions under subsection 109.07 of the MDOT Standard Specifications for Construction.
- F.  Contract Price \$30,000 or more or Contract Price to be paid in more than three (3) payments.

Payments, based on progress estimates, will be made within 30 days from approval for Ninety (90%) percent of the Work completed as set forth in the progress estimate, until the Work is Fifty (50%) in place. Thereafter, additional retainage shall not be withheld unless it is determined that the Contractor is not making satisfactory progress, or that there is other specific cause relating to the Contractor's performance under the Contract. If such a determination is made, not more than Ten (10%) percent of the dollar value of the work more than Fifty (50%) percent in place shall be retained as additional retainage. No payment estimate shall be paid until approved by the Engineer, and shall be less any deductions or reservations which may be made in accordance with the terms of the Contract. No allowance will be made for materials furnished, unless incorporated in the finished Work, unless otherwise stated.

OR

Contract Price less than \$30,000 or Contract Price to be paid in three (3) or less payments.

Payments, based on progress estimates, will be made within 30 days from approval for 90% of the Work completed as set forth in the progress estimate and approved by the Engineer, less any deductions or reservations which may be made in accordance with the terms of the Contract. No allowance will be made for materials furnished, unless incorporated in the finished Work, unless otherwise stated.

G. Only those items mentioned in the bid form are pay items. It is the Contractor's responsibility to complete those items and to furnish all other materials, workers, and machines to obtain a complete and satisfactory job. All other necessary items for a complete job shall be considered incidental and not pay items.

**21. ESTIMATED QUANTITIES.**

The quantities of the various classes of Work to be done and materials to be furnished under this Contract, which have been estimated as stated elsewhere herein, are approximate and only for the purpose of comparing, on a uniform basis, the bids offered for the Work under this Contract; and neither the Road Commission nor its agents is to be held responsible should any of the said estimated quantities be found incorrect during the construction of the Work; and the Contractor shall make no claim or request for anticipated profit nor for loss of profit, because of a difference between the quantities of the various classes of Work actually done or materials actually delivered, and the estimated quantities as herein stated.

**22. PAYMENTS WITHHELD.**

A. The Road Commission may withhold or nullify the whole or a part of any certificate for progress payment to such extent as may be necessary to protect itself from loss on account of:

1. Defective Work not remedied;
2. Defective materials not replaced;
3. Claims filed or reasonable evidence indicating probable filing of claims;
4. Failure of the Contractor to make payments properly to subcontractors or for material or labor;
5. A reasonable doubt that the Contract can be completed for the balance then unpaid;
6. Damage to another contractor; or
7. Liquidated Damages.

B. When the above grounds are removed, payment shall be made for amount withheld because of them.

23. **TIME FOR COMPLETION; LIQUIDATED DAMAGES.**

A. The Work which the Contractor is required to perform under this Contract shall be commenced and fully completed at the time stipulated by the Road Commission in a written "Notice to Proceed" to the Contractor.

B. This is to be a daytime operation (8:00 a.m. - 5:00 p.m.), Monday through Friday, unless otherwise approved by the Engineer.

C. Liquidated Damages for Road Commission Oversight Costs. The Contractor shall be responsible for liquidated damages in the amount set forth in the Schedule of Liquidated Damages for Oversight **in Table 108-1 of the 2020 Standard Specifications for Construction** per calendar day for each day after the substantial completion date the Work remains substantially incomplete until the Work is substantially complete unless approved by the Road Commission in writing. Additionally, the Contractor shall be responsible for liquidated damages in the amount of the greater of one-half (1/2) of the amount set forth in the Schedule of Liquidated Damages for Oversight in Table 108-1 of the MDOT Standard Specifications for Construction or the actual expenses incurred by the Road Commission each day after the Work is substantially complete but outstanding items (Punch List Items) remain incomplete unless the Punch List Items are completed within the deadline set forth by the Road Commission in writing.

Sums assessed as liquidated damages are not penalties, but fixed and agreed upon damages due to the Road Commission from the Contractor representing the Road Commission's added cost of engineering and supervision and other items causing the expenditure of public funds due to the Contractor's failure to substantially complete or complete the Work within the specified time period.

**24. USE OF REFERENCES.**

- A. Work specified by reference to the published standard or specification of a government agency, technical association, trade association, professional society or institute, testing agency, or other organization shall conform to or surpass the minimum standards of quality for materials and Workmanship established by the designated standard or specification.
- B. Where so specified, products or Workmanship shall also conform to the additional prescriptive or performance requirements included within the Contract Documents to establish a higher or more stringent standard of quality than that required by the referenced standard.
- C. Where two or more standards are specified to establish quality, the product and Workmanship shall conform to or surpass the requirements of both.
- D. In case of conflict between referenced standards, the more stringent shall apply.
- E. Where both a standard and a brand name are specified for a product on the Contract Document, the proprietary product named shall conform to or surpass the requirements of the specified reference standard. The listing of a trade name in a Contract Document shall not be construed as warranting that such product conforms to the respective referenced standard.
- F. Copies of applicable referenced standards have not been bound in this Contract Document. Where copies of standards are needed by the Contractor for superintendence and quality control of the Work, the Contractor shall obtain a copy or copies directly from the publication source and maintain it in an orderly manner at the jobsite where it is available to the Contractor's personnel, subcontractors, Road Commission personnel and the Engineer.

**25. CONTRACT SUBMITTALS.**

- A. Record Drawings.   **will not** be required. Unless otherwise directed by the Engineer, at the time of substantial completion, the Contractor shall submit to the Engineer a current listing and description of each change incorporated into the Work since the preceding submittal.
- B. Warranties. The Contractor shall furnish one copy of all manufacturers' warranties, if any, for products or systems installed in the Project.
- C. Material Certifications. The Contractor shall submit as requested by the Engineer, material tickets, site measurements, and material certifications.

**26. FAILURE TO ENFORCE.** Failure by the Road Commission at any time to enforce the provisions of the Contract Documents shall not be construed as a waiver of any such

provisions. Such failure to enforce shall not affect the validity of the Contract Documents or any part thereof, or the right of the Road Commission to enforce any provision at any time in accordance with its terms.

27. **FREEDOM OF INFORMATION ACT.** The Contractor acknowledges that the Road Commission may be required from time to time to release records in its possession by law. The Contractor hereby gives permission to the Road Commission to release any records or materials received by the Road Commission as it may be requested to do so as permitted by the Freedom of Information Act, MCL 15.231 *et seq.* Provided, however, that the Contractor shall not be held liable for any reuse of the documents prepared by the Contractor under this Contract for purposes other than anticipated herein.

GRAND TRAVERSE COUNTY ROAD COMMISSION  
SPECIAL PROVISION  
FOR  
**PROGRESS CLAUSE**

GTCRC:DRW

1 of 1

12-27-2023

Submit a complete, detailed and signed MDOT Form 1130, Progress Schedule, to the Engineer within seven (7) calendar day of confirmation of low bid by the department.

The progress schedule submittal must include, as a minimum, the controlling work items for the completion of the project and the planned dates (or work days for a work day project) that the work items will be the controlling operations. When specified in the proposal or contract documents the date the project is to be opened to traffic, the final project completion date, all interim completion dates, and any other controlling dates must be included in the project schedule.

After receiving Notice of Award, start work on the date agreed upon with the Engineer which date shall be no earlier than **May 1, 2024**. In no case, shall any work be commenced prior to receipt of formal notice of award by the department.

The entire project must be completed on or before the final project completion date of **June 27, 2024**.

Failure by the Contractor to meet interim, final and/or any stage completion dates will result in the assessment of liquidated damages in accordance with subsection 108.10 of the Standard Specifications for Construction.

After award and prior to the start of work, the Contractor must attend a preconstruction meeting with the Engineer. The schedule for this meeting will be determined by the Engineer after submittal of form 1130. The Engineer will arrange the day, time and place for the preconstruction meeting. The meeting will be conducted after project award and may be rescheduled if there are delays in the award of the project.

The named subcontractor(s) for, Designated and/or Specialty items, as shown in the proposal, is recommended to be at the preconstruction meeting if such items materially affect the work schedule.

GRAND TRAVERSE  
COUNTY ROAD COMMISSION

SPECIAL PROVISION  
FOR  
**MAINTAINING TRAFFIC**

GTCRC:DRW

1 of 6

**a. Description.** This special provision consists of requirements and restrictions to maintain traffic on various routes in Grand Traverse County.

**b. General.** Maintain traffic throughout the project in accordance with the standard specifications, typicals, and supplemental specifications in the contract and as described on the plans for this project.

**c. Construction Influence Area (CIA).** The CIA includes the right-of-way of the following roadways, within the approximate limits as listed in the log of project:

1. In addition, the CIA includes the right-of-way of any designated detour route or alternate route, intersecting roads and ramps adjacent to the work zone for a distance of approximately 1/4 mile in advance of the work zone or as far as the construction or detour signing extends.

**d. Traffic Restrictions.** Maintain traffic in accordance with the Maintaining Traffic Typicals contained herein, except as noted below. Changes or adjustments to the Maintaining Traffic Typicals may be necessary to fit field conditions, subject to approval of the Engineer or as determined by the Engineer.

1. Utilize the following Maintaining Traffic Typicals:

- A. 101-GEN-SPACING-CHARTS
- B. 102-GEN-NOTES
- C. 103-GEN-SIGN
- D. 104-GEN-AB
- E. 110-TR-NFW-2L
- F. 123-NFW-1LC-(R)
- E. 0-PMC-ALL
- F. 0-PMC-INDEX
- O. WZD-125-E

2. Do not work, deliver material, or close lanes during the holiday/special event periods as defined in Table 1

**Table 1: 2024 Holiday Periods/Special Events**

Holiday	Start Date and Time	End Date and Time
Memorial Day	3:00 pm, Thursday, May 23rd	6:00 am, Tuesday, May 28th
Independence Day/National Cherry Festival	3:00 pm, Thursday, June 27 <sup>th</sup>	6:00 am, Tuesday, July 9 <sup>th</sup>
Labor Day	3:00 pm, Thursday, August 29 <sup>th</sup>	6:00 am, Tuesday, September 3 <sup>rd</sup>

3. Perform work and lane closures within the allowable time frames as shown in Table 2, unless otherwise approved by the Engineer.

**Table 3: South Airport and Cass Road Traffic Restrictions**

Closure Type	Start Time	End Time	M	Tu	W	Th	F	Sa	Su
Shoulder Closures	00:00	24:00	∞	∞	∞	∞	∞	∞	∞
Single Lane Closures	00:00	06:59	∞	∞	∞	∞	∞	∞	∞
	06:59	18:59	0	0	0	0	0	0	0
	19:00	24:00	∞	∞	∞	∞	∞	∞	∞
	∞ = Closure is allowed, and the frequency is not limited during the project timeframe								
# = The number of times closures can take place during the project timeframe.									

4. Maintain a minimum of one lane(s) of traffic in each direction at all times on the routes listed in the log of project. (And all intersecting roads and ramps, except where detoured.)

5. Maintain a minimum of one lane of traffic in each direction at all times on all signalized side roads.

6. No more than 1 closure is allowed in each direction of travel at the same time.

7. Close any dedicated lanes (exit, ramp, turn, etc.) prior to the location under construction.

8. When a lane is closed, place channelizing devices at cross streets and major drives to form a radius that clearly defines the approaches to the through and turning traffic.

9. Maintain access to all driveways as directed by the Engineer unless prior agreements are made with the respective property owners. The cost of constructing driveways part width will not be paid for separately.

**e. Traffic General.**

1. For any lane open to traffic, provide a minimum lane width of 11 feet with 2 feet of shy distance on both sides unless identified otherwise on plans.

2. Do not close lanes or utilize traffic regulation sequences where work can be accomplished with a shoulder closure. Do not occupy any part of the active traffic lane with personnel or equipment when utilizing a shoulder closure. Place lane closures and traffic regulation operations only in areas as show on the plans unless otherwise directed by the Engineer.

3. Prior to shifting traffic onto shoulders or opening any lanes/shoulders and/or ramps, remove, by sweeping all accumulated debris that has collected within the shoulder and/or within the closed lane/shoulder.

4. A speed reduction will not be used.

5. The Contractor shall prepare and submit to the Engineer a project specific traffic control plan in accordance with the Michigan Manual of Uniform Traffic Control Devices and the MDOT Maintaining Traffic Typicals. Work shall NOT be performed on a project without an approved traffic control plan.

6. Protect the work area at the end of each day. Close all open access points on the project to traffic with Type III barricades or other devices approved by the Engineer.

7. The Contractor shall notify the department, Grand Traverse County Road Commission, a minimum of five business days prior to implementation of any detours, lane closures or major traffic shifts. The department will be responsible for notifying emergency services, transit agencies, law enforcement and schools prior to any lane closures, detours or major traffic shifts. In addition, the Contractor will be responsible for working with and complying with any coordination that is necessary with the Grand Traverse County Road Commission and emergency services, transit agencies, law enforcement and schools. All costs associated with these coordination efforts will be considered included in the pay item **Temporary Traffic Control**

8. Remove all temporary traffic control devices from GTCRC/MDOT right-of-way during any shut down periods unless needed for directly maintaining or channelizing traffic. No additional payment will be made for removal and/or redeployment of these devices except for in the case of an approved extension of time.

9. Once work is initiated that includes any lane restrictions, that work must be continued daily until completed. A lack of work activity for more than 3 days will require the removal of lane closures at no expense to the Department.

**f. Traffic Regulator Control.**

1. Maintain two-way traffic at all times on the routes listed in the log of project using traffic regulator control. A traffic regulator sequence is allowed to cover a maximum closure length of 1/2 mile. Place the arrow panel, signs and channelizing taper for the traffic regulator operation at locations approved by the Engineer for adequate visibility by oncoming traffic.

2. Do not utilize more than 1 traffic regulator operation(s) at one time on each route listed in the log of project

3. Crossroads must remain open to traffic at all times. Use intermediate traffic regulators at each intersection approach and commercial driveways within the closure limits, as directed

by the Engineer. Use traffic regulator control as directed by the Engineer for cross street traffic while paving through intersections.

4. Follow the [Michigan Traffic Regulator's Instruction Manual](#) for operations at signalized intersections. Contact the GTCRC signal technician prior to work near GTCRC traffic signals. Only the GTCRC signal technician may make changes to the traffic signal controllers. Contact the MDOT region electrician or applicable maintaining agency prior to work near MDOT traffic signals. Only the MDOT region electrician or applicable maintaining agency may make changes to the traffic signal controllers.

**g. Special Considerations at Railroad Crossings.**

1. Do not obstruct the right-hand display of the railroad signal to traffic approaching the crossing.
2. Do not extend lane closure taper(s) through the crossing. Traffic lane shifts cannot transition over the crossing.
3. Do not place construction traffic control devices in the railroad crossing or closer than 25 feet from the outside rail on either crossing approach.
4. An intermediate traffic regulator is required at the railroad crossing while it is in the zone where traffic is maintained by traffic regulator control. The traffic regulator will serve to stop traffic for vehicles traveling in the direction opposed to normal flow and prevent them from entering the crossing upon a train approaching the crossing. When the railroad crossing is in the influence zone of active construction work, but not in a lane closure, the roadway traffic regulator will give immediate preference to clearing any traffic which backup over the crossing as a result of the traffic regulator control away from the crossing.
5. Place a temporary stop line and sign R15-1 (crossbuck) to indicate the stopping point in advance of the crossing for vehicles traveling in a direction opposed to normal flow.
6. Roadway traffic regulator control operation is through crossing(s) with half-roadway gates will also have a railroad watchperson present to provide notice of train approach to the crossing in advance of railroad warning device activation, so the crossing may be cleared of vehicular traffic. The Contractor is responsible for contacting the applicable railroad to obtain and pay for a railroad watchperson.
7. The presence of a railroad flagger does not relieve the Contractor of the responsibility for intermediate traffic regulators.
8. When nighttime work is being performed, providing lighting to illuminate traffic regulators and railroad flaggers at the railroad crossing.

**h. Pedestrian or Non-Motorized Facilities.**

1. Maintain all facilities in accordance with *The Americans with Disability Act (ADA)* requirements and the Public Rights-of Way Accessibility Guidelines (PROWAG). Provide facilities equivalent to or better than the route a person would have encountered prior to construction activities.

2. Submit an "ADA Work Plan" for sidewalk and ADA ramp construction prior to any sidewalk ramp closures or removals. The work plan must address pedestrian access and detours. Plan will allow a ramp closure up to (96) hours. The Engineer will have 7 calendar days to review the plan for approval or provide comments for revisions required to obtain approval. Do not proceed with the work until the Engineer has approved the plan.

3. Close and detour any sidewalk ramps and crosswalk areas to pedestrian traffic that are impacted by the work. Cover pedestrian signal heads when the crosswalk or ramp is affected.

4. Keep sidewalk areas clear of any equipment or materials at all times the sidewalks are open to pedestrian traffic.

i. **Traffic Control Devices.** Ensure all traffic control devices are in accordance with the MMUTCD and must meet the "acceptable" criteria as defined in the ATSSA publication entitled "*Quality Guidelines for Temporary Traffic Control Devices and Features*" at the time of initial deployment and after each major stage change.

1. During non-working periods, place applicable advance signs and channelizing devices at specific locations, as directed by the Engineer, at no additional cost to the Department.

2. Notify the Engineer 24 hours in advance of when traffic control devices are being delivered to the project site, to allow for initial inspection of devices to take place.

3. Remove from the project site all traffic control devices (including detour signing) no longer needed for a particular operation and equipment for construction within 14 calendar days of reopening the shoulder/lane/roadway.

4. Channelizing Devices.

A. Ensure all devices have sufficient ballast to prevent moving or tipping. If moving or tipping occurs, place additional ballast, as directed by the Engineer, at no additional cost to the Department. No more than two ballasts are allowed on each channelizing device.

B. Do not use caution tape on this project.

5. Temporary Signs.

A. Additional W20-1 (ROAD WORK AHEAD) signs are included in the quantities to be placed on all intersecting or adjacent roads where construction activities may be encountered.

B. Fabricate, install, and remove temporary sign overlays on existing signs with the pay item for Sign, Type B, Temp, Prismatic, Furn. Attach the overlay in accordance with subsection 812.03.D.2 of the Standard Specifications for Construction.

**j. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

Pay Item	Pay Unit
Temporary Traffic Control.....	LSUM

The department will make partial payments for **Temporary Traffic Control** in accordance with the following table:

Partial Payment Schedule for Temporary Traffic Control	
Stage of Project	Total Percent of Unit Price Paid
First Use	50%
Completion	100%

# Michigan Department of Transportation Traffic and Safety



## PAVEMENT MARKING CONVOY TYPICAL PLANS

### PMC1E THRU PMC23E

#### Disclaimer:

The information provided is a product of the Michigan Department of Transportation (MDOT) and is intended for your use and is not to be sold or otherwise distributed for profit. There are no expressed or implied warranties concerning the accuracy, completeness, reliability or usability of this information. The MDOT assumes no responsibility for any incorrect results or damage resulting from the use of this information.

The information presented in these documents has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability by a licensed professional engineer.

#### ENGLISH VERSION



DEPARTMENT DIRECTOR  
KIRK T. STEUDLE

PREPARED  
BY  
TRAFFIC AND SAFETY

ENGINEER OF TRAFFIC AND SAFETY

DRAWN BY: KBK

CHECKED BY: JM

FILE: rd/ts/signs/pave markings/PMCcoverpave.e.dgn REV. Feb. 4, 2004 KBK

TYPICAL PLAN NUMBER	IN THIS CONTRACT	TITLE	TOTAL SHEETS
PMC1e		PAVEMENT MARKING CONVOY WATERBORNE PAINT TYPICAL FOR FREEWAY EDGELINE WITH CONES (ALL REGIONS)	1
PMC2e		OBsolete	1
PMC3e		PAVEMENT MARKING CONVOY WATERBORNE PAINT TYPICAL FOR FREEWAY EDGELINE WITHOUT CONES (ALL REGIONS)	1
PMC4e		PAVEMENT MARKING CONVOY WATERBORNE PAINT TYPICAL FOR RAMP EDGELINE WITH CONES (ALL REGIONS)	1
PMC5e		PAVEMENT MARKING CONVOY WATERBORNE PAINT TYPICAL FOR RAMP EDGELINE WITH CONES (ALL REGIONS)	1
PMC6e		OBsolete	1
PMC7e		PAVEMENT MARKING CONVOY WATERBORNE PAINT TYPICAL FOR FREEWAY LANELINE WITHOUT CONES (ALL REGIONS)	1
PMC8e		OBsolete	1
PMC9e		PAVEMENT MARKING CONVOY WATERBORNE PAINT TYPICAL FOR MULTIPLE FREEWAY LANELINES WITHOUT CONES (ALL REGIONS)	1
PMC10e		PAVEMENT MARKING CONVOY WATERBORNE PAINT TYPICAL FOR NON-FREEWAY EDGELINES WITH CONES (ALL REGIONS)	1
PMC11e		PAVEMENT MARKING CONVOY WATERBORNE PAINT TYPICAL FOR 2-LANE 2-WAY ROADWAY CENTERLINE (ALL REGIONS)	1
PMC12e		PAVEMENT MARKING CONVOY WATERBORNE PAINT TYPICAL FOR CENTERLINE OF 4 OR 6 LANE 2-WAY ROADWAY (ALL REGIONS)	1
PMC13e		PAVEMENT MARKING CONVOY WATERBORNE PAINT TYPICAL FOR CENTER LANE FOR LEFT TURN AND NON-FREEWAY LANELINES (ALL REGIONS)	1
		pw:rd/ts/signs/pave markings/PMCindex.dgn	11/17/2009 KL



PREPARED  
BY  
TRAFFIC & SAFETY

DRAWN BY: KBK

CHECKED BY: JM

ENGINEER OF TRAFFIC AND SAFETY

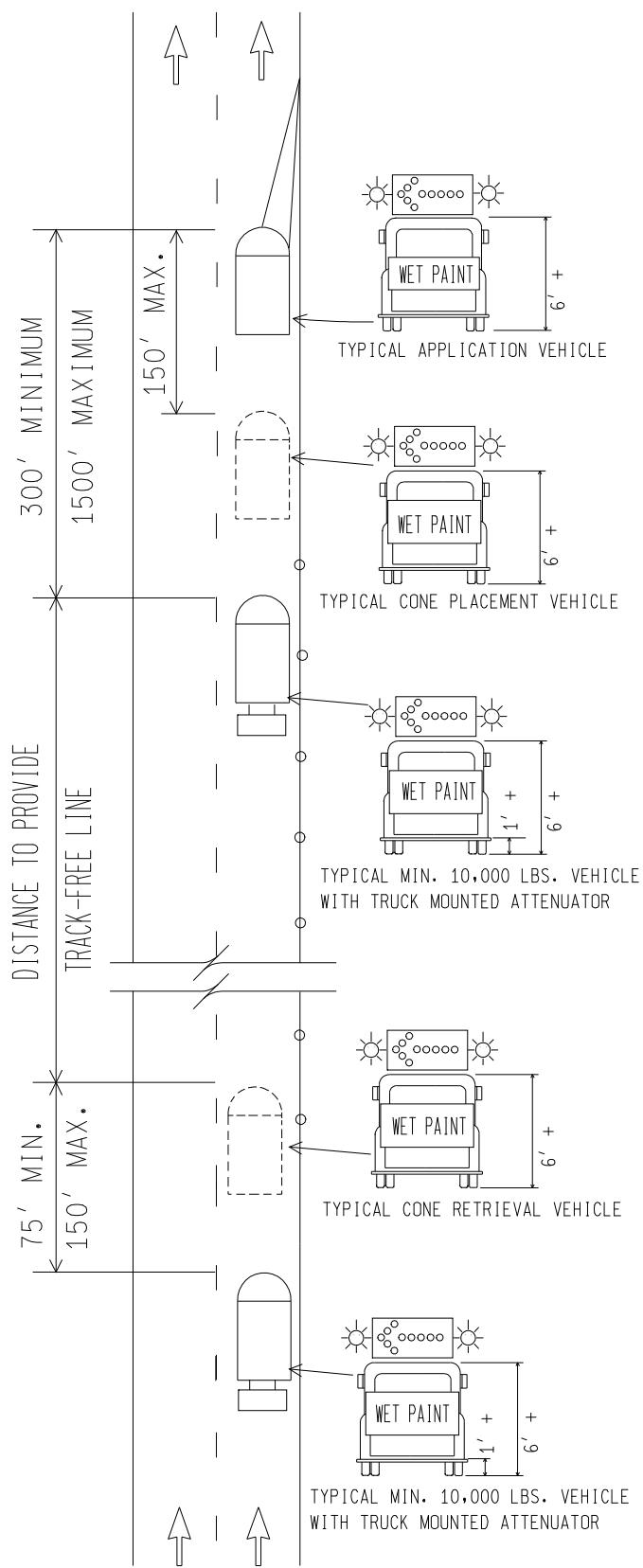
MICHIGAN DEPARTMENT OF TRANSPORTATION  
BUREAU OF HIGHWAYS TYPICAL PLAN FOR  
PAVEMENT MARKING CONVOY  
TYPICAL PLANS INDEX

2/04  
PLAN DATE

ENGLISH

SHEET  
1 of 2





1. ALL VEHICLES SHALL BE EQUIPPED WITH:
  - a. TWO ROTATING YELLOW BEACONS OR STROBES VISIBLE FROM ANY APPROACH ANGLE
  - b. TYPE B OR C FLASHING ARROW PANEL AS SHOWN
  - c. "WET PAINT" SIGN AS SHOWN
2. ATTENUATED VEHICLE(S) SHALL WEIGH AT LEAST 10,000 LBS. AND BE LOCATED AS SHOWN.
3. BOTH THE CONE PLACEMENT AND CONE RETRIEVAL VEHICLES MAY BE INCORPORATED INTO THE VEHICLE EQUIPPED WITH THE TRUCK MOUNTED ATTENUATOR. CONES SHOULD BE PLACED 100' APART.
4. ILLUSTRATED CONVOY IS ALSO APPLICABLE FOR MARKING LEFT EDGE LINE, EXCEPT CONVOY VEHICLES SHALL OCCUPY LEFT LANE AND USE RIGHT DIRECTIONAL FLASHING ARROW.
5. LANE LINE MAY BE APPLIED AT THE SAME TIME AS LEFT EDGE LINE. LANE LINE SHALL NOT BE PLACED FROM RIGHT LANE.
6. DASHED LINE DENOTES OPTIONAL VEHICLE.

20. REFER TO PMC22e FOR ADDITIONAL CONVOY SIGNING REQUIREMENTS.



TRAFFIC AND SAFETY  
DIVISION

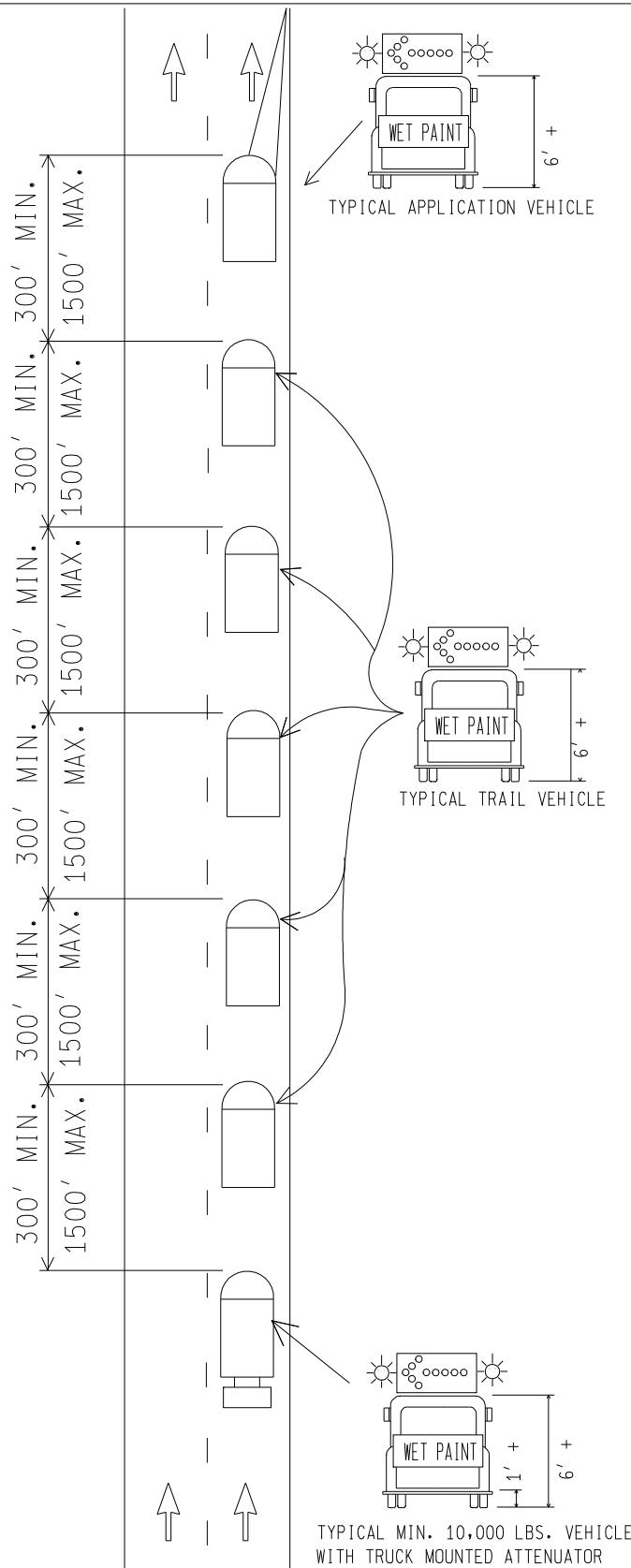
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Page 47 of 149

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PMC2e

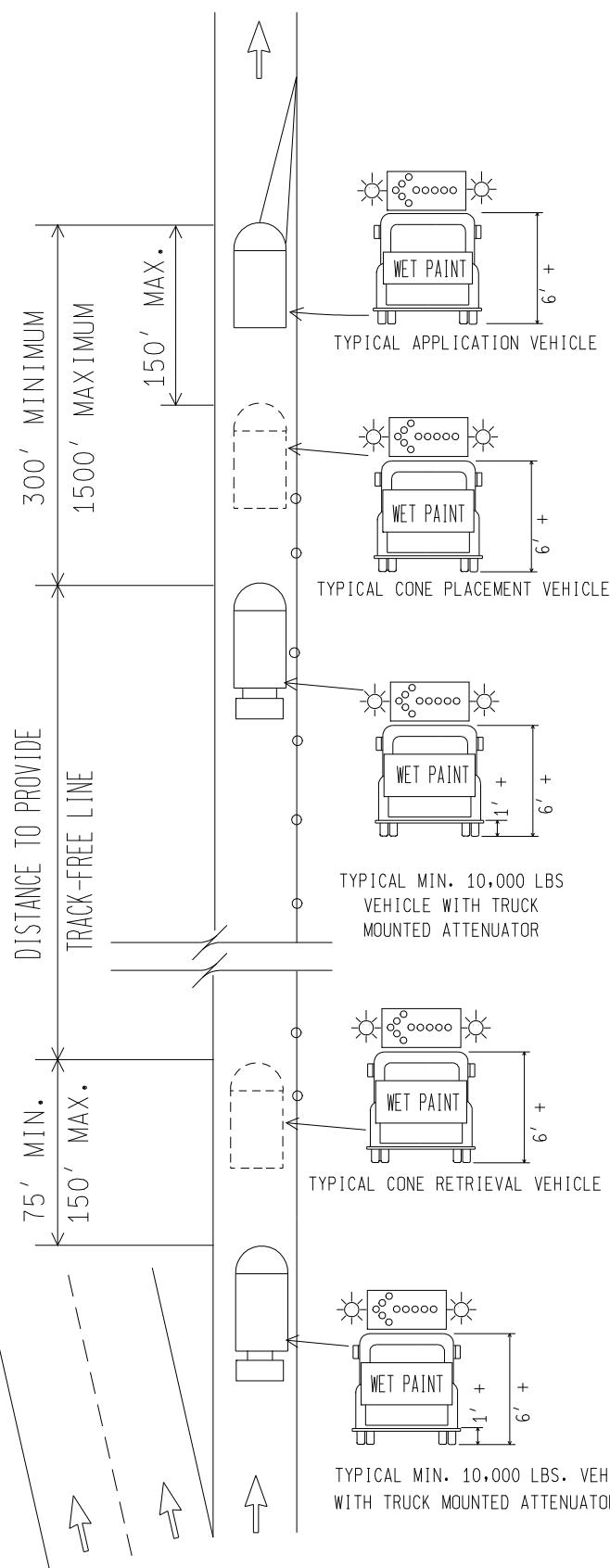
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1 OF 1



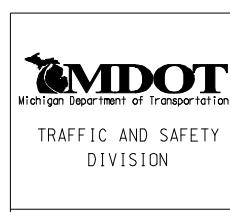
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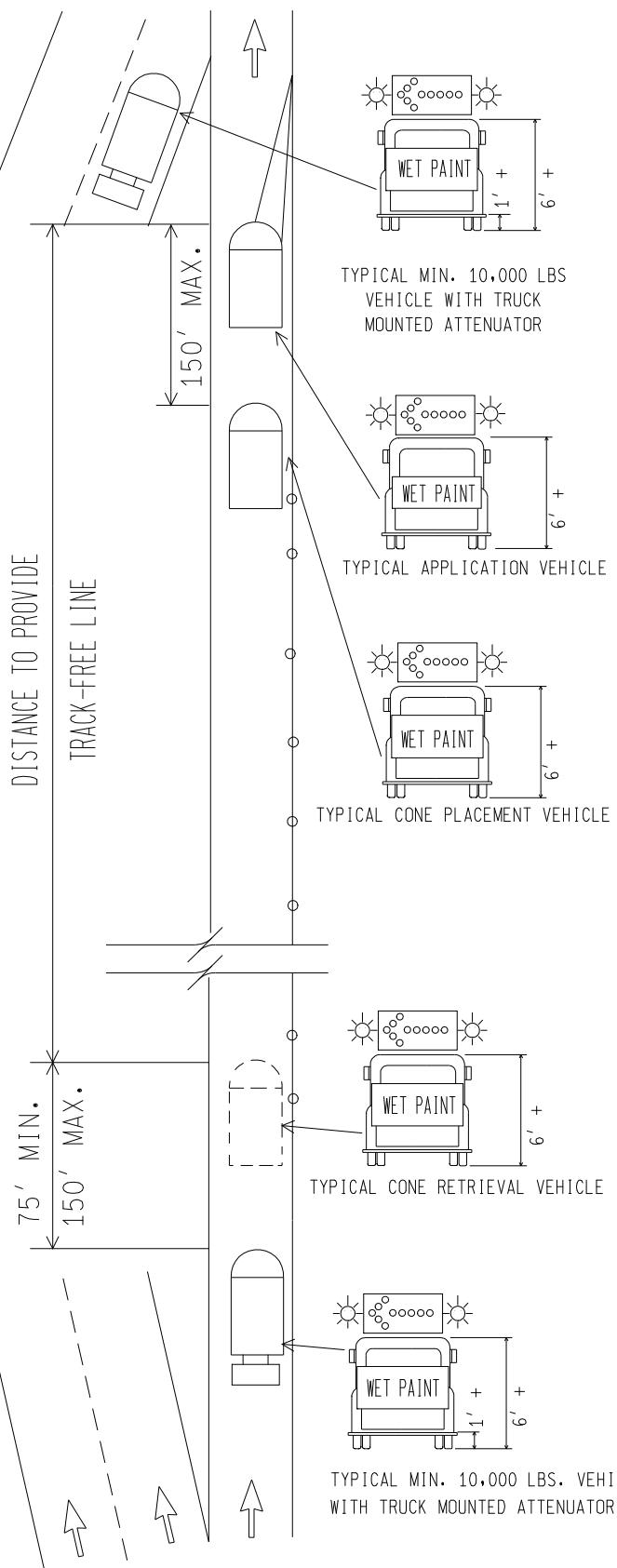
PAVEMENT MARKING CONVOY  
WATERBORNE PAINT  
TYPICAL FOR  
FREEWAY EDGELINE WITHOUT CONES  
(ALL REGIONS)



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6. DASHED LINE DENOTES OPTIONAL VEHICLE.
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PAVEMENT MARKING CONVOY  
WATERBORNE PAINT  
TYPICAL FOR  
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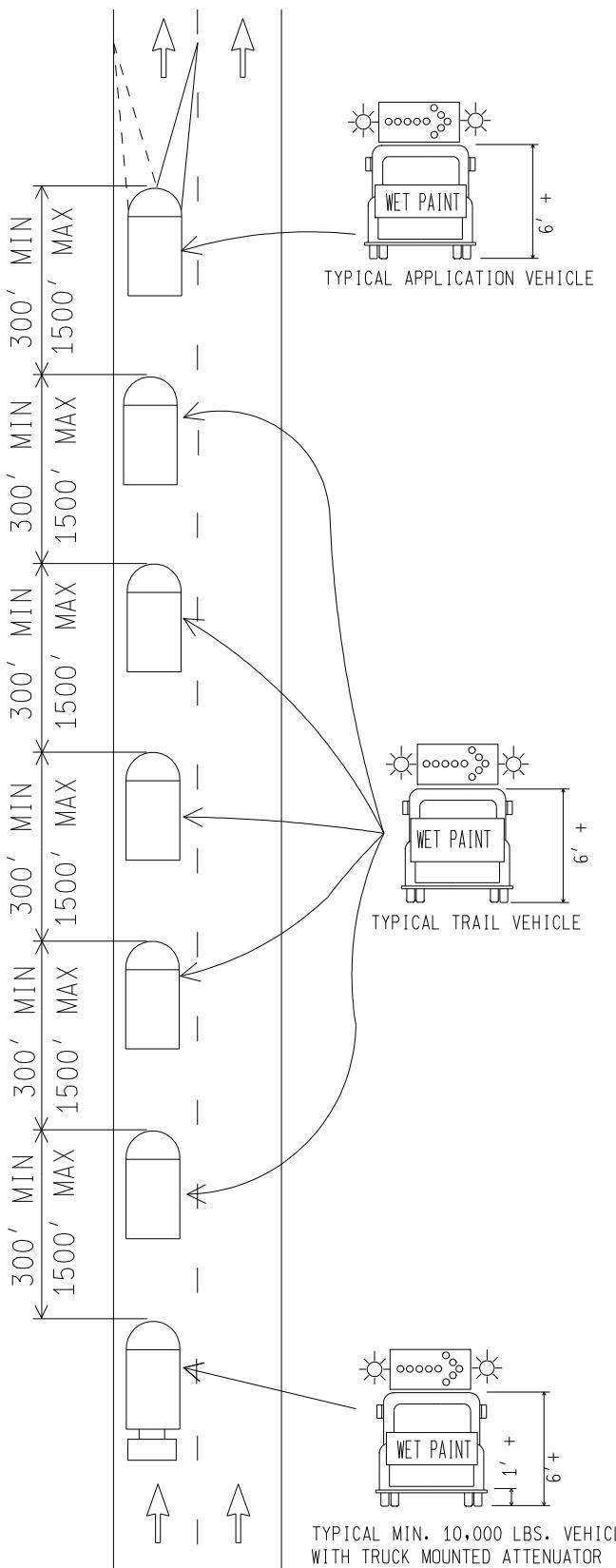


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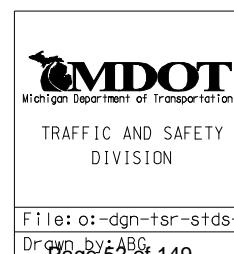
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SHEET  
1 OF 1



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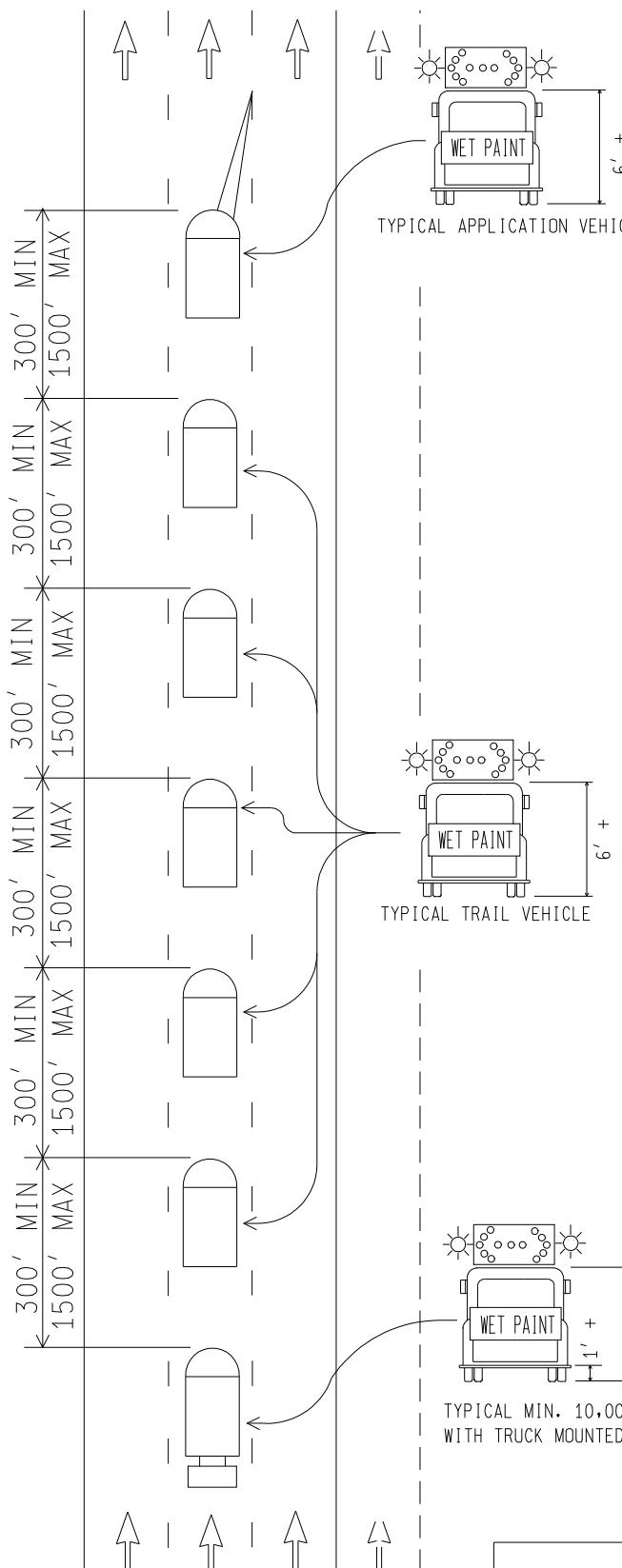


**PAVEMENT MARKING CONVOY**  
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**(ALL REGIONS)**

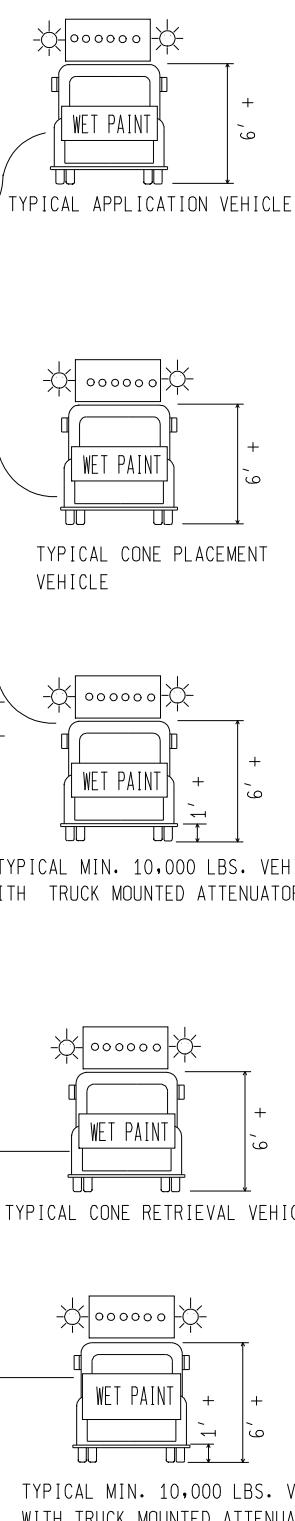
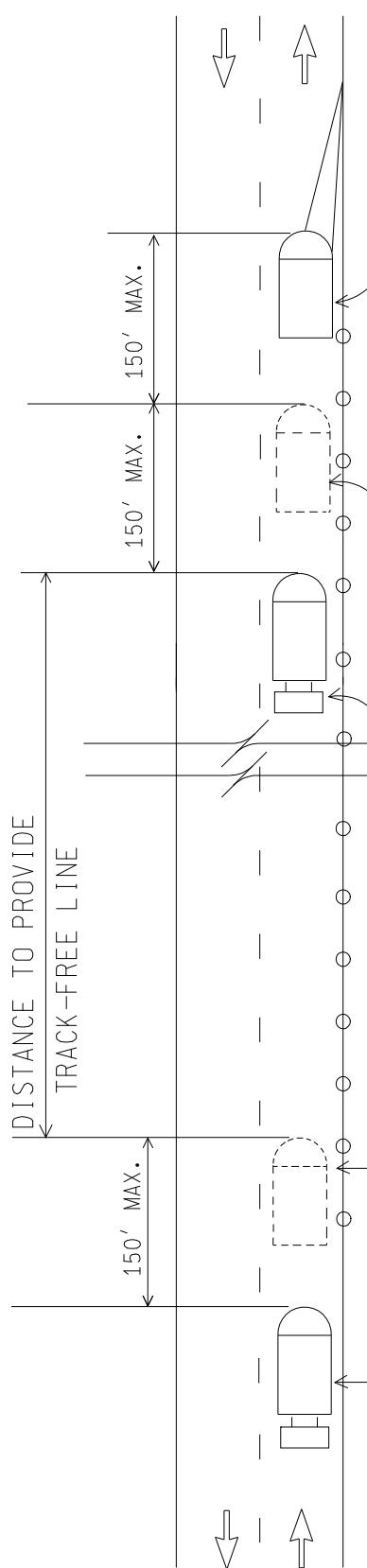


TRAFFIC AND SAFETY  
DIVISION

OBSOLETE



1. ALL VEHICLES SHALL BE EQUIPPED WITH:
  - a. TWO ROTATING YELLOW BEACONS OR STROBES VISIBLE FROM ANY APPROACH ANGLE
  - b. TYPE B OR C FLASHING ARROW PANEL AS SHOWN
  - c. "WET PAINT" SIGN AS SHOWN
2. ATTENUATED VEHICLE(S) SHALL WEIGH AT LEAST 10,000 LBS. AND BE LOCATED AS SHOWN.
11. ILLUSTRATED CONVOY IS APPLICABLE FOR APPLYING TWO LANE LINES OR RIGHT LANE LINE ONLY.
12. LEFT LANE LINE MAY BE STRIPED AT THE SAME TIME AS THE LEFT EDGE LINE. LEFT LANE LINE SHALL NOT BE PLACED FROM THE RIGHT LANE.
20. REFER TO PMC22e FOR ADDITIONAL CONVOY SIGNING REQUIREMENTS



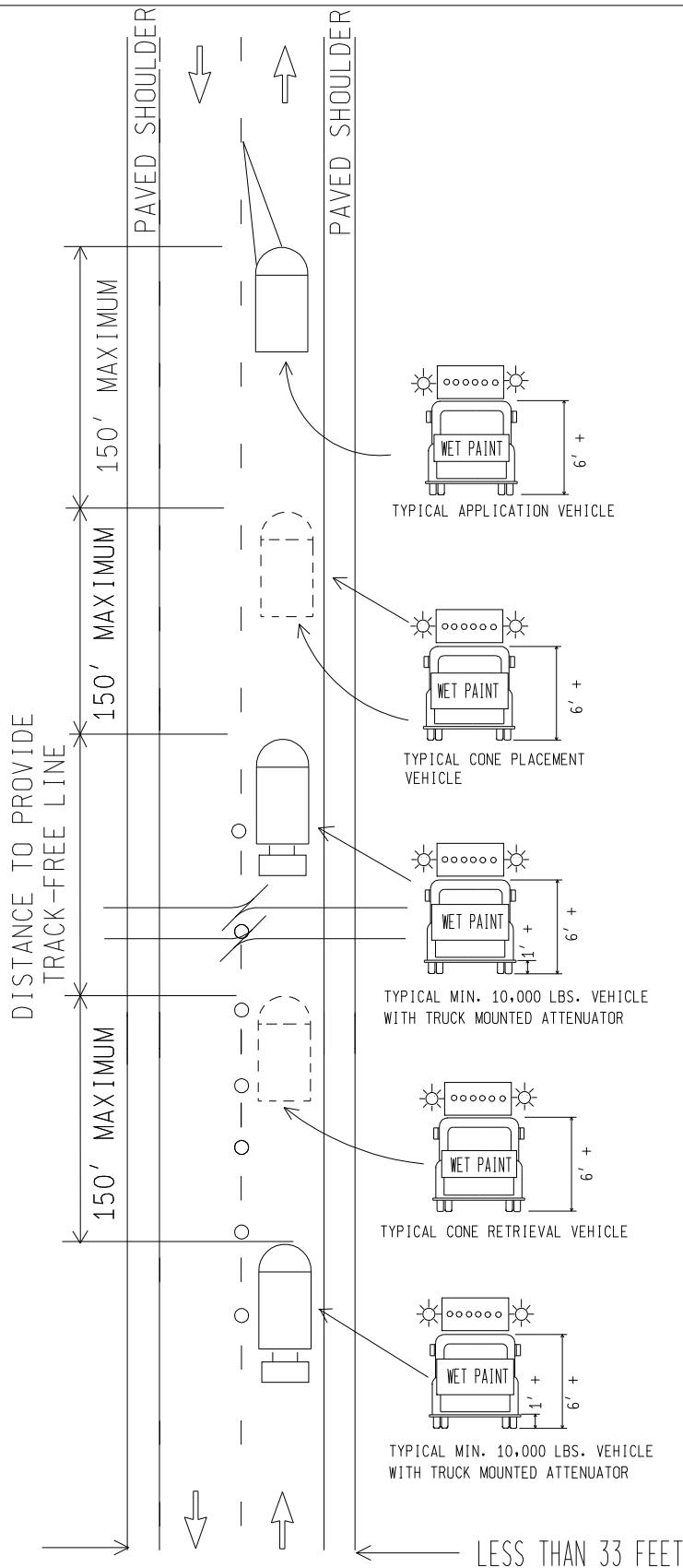
1. ALL VEHICLES SHALL BE EQUIPPED WITH:
  - a. TWO ROTATING YELLOW BEACONS OR STROBES VISIBLE FROM ANY APPROACH ANGLE
  - b. TYPE B OR C FLASHING ARROW PANEL AS SHOWN
  - c. "WET PAINT" SIGN AS SHOWN
2. ATTENUATED VEHICLE(S) SHALL WEIGH AT LEAST 10,000 LBS. AND BE LOCATED AS SHOWN.
3. BOTH THE CONE PLACEMENT AND CONE RETRIEVAL VEHICLES MAY BE INCORPORATED INTO THE VEHICLE EQUIPPED WITH THE TRUCK MOUNTED ATTENUATOR. CONES SHOULD BE PLACED 100' APART.
6. DASHED LINE DENOTES OPTIONAL VEHICLE.
13. ON ROADWAYS WITH TWO OR MORE LANES IN EACH DIRECTION, THE ILLUSTRATED CONVOY IS APPLICABLE EXCEPT LEFT DIRECTIONAL FLASHING ARROW PANEL SHALL BE USED.
17. CENTER LINE MAY NOT BE STRIPED AT THE SAME TIME AS THE EDGELINE.
20. REFER TO PMC22e FOR ADDITIONAL CONVOY SIGNING REQUIREMENTS



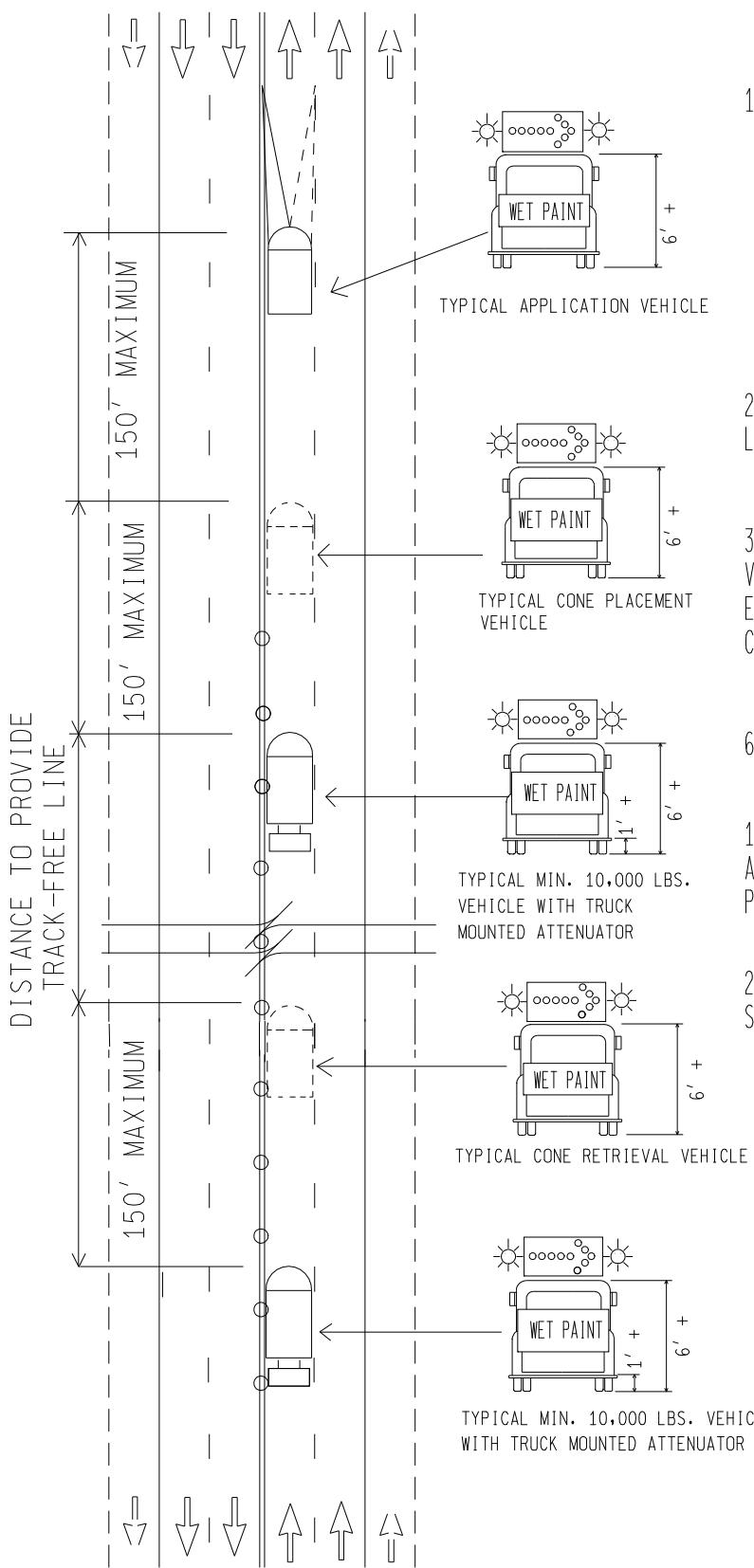
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 Page 55 of 149

PAVEMENT MARKING CONVOY  
 WATERBORNE PAINT  
 TYPICAL FOR  
 NON-FREEWAY EDGELINES  
 WITH CONES (ALL REGIONS)

PMC10e  
 SHEET 1 OF 1



1. ALL VEHICLES SHALL BE EQUIPPED WITH:
  - a. TWO ROTATING YELLOW BEACONS OR STROBES VISIBLE FROM ANY APPROACH ANGLE
  - b. TYPE B OR C FLASHING ARROW PANEL AS SHOWN
  - c. "WET PAINT" SIGN AS SHOWN
2. ATTENUATED VEHICLE(S) SHALL WEIGH AT LEAST 10,000 LBS. AND BE LOCATED AS SHOWN.
3. BOTH THE CONE PLACEMENT AND CONE RETRIEVAL VEHICLES MAY BE INCORPORATED INTO THE VEHICLE EQUIPPED WITH THE TRUCK MOUNTED ATTENUATOR.
6. DASHED LINE DENOTES OPTIONAL VEHICLE.
15. WHERE SHOULDERS ARE NARROW AND INSUFFICIENT WIDTH EXISTS TO ALLOW PASSING ON THE RIGHT, THE CONVOY SHALL CEASE OPERATION AND PULL OFF THE ROADWAY TO ALLOW QUEUED TRAFFIC TO PASS AT REASONABLE INTERVALS.
17. CENTER LINE MAY NOT BE STRIPED AT THE SAME TIME AS THE EDGELINE.
20. REFER TO PMC22e FOR ADDITIONAL CONVOY SIGNING REQUIREMENTS



1. ALL VEHICLES SHALL BE EQUIPPED WITH:

- a. TWO ROTATING YELLOW BEACONS OR STROBES VISIBLE FROM ANY APPROACH ANGLE
- b. TYPE B OR C FLASHING ARROW PANEL AS SHOWN
- c. "WET PAINT" SIGN AS SHOWN

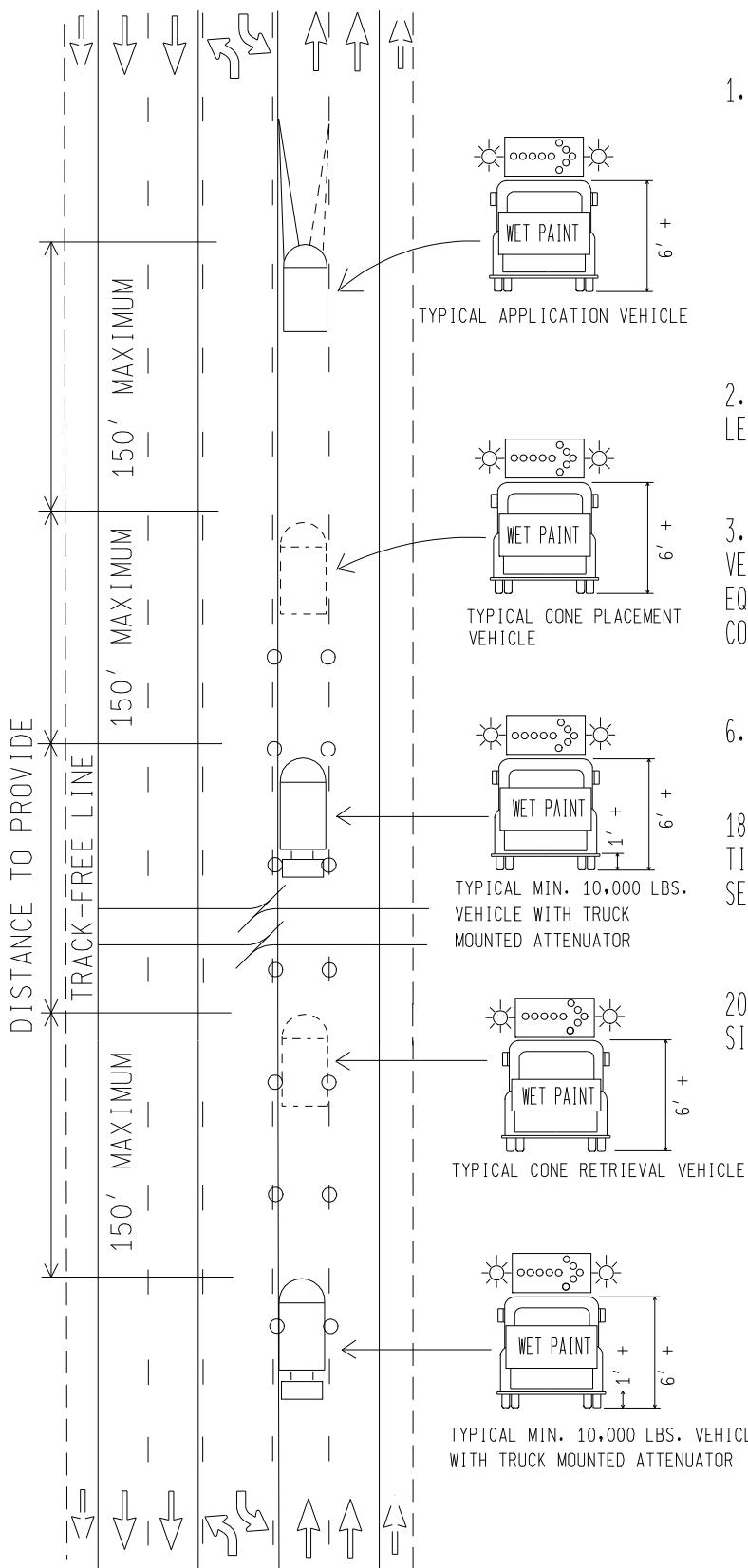
2. ATTENUATED VEHICLE(S) SHALL WEIGH AT LEAST 10,000 LBS. AND BE LOCATED AS SHOWN.

3. BOTH THE CONE PLACEMENT AND CONE RETRIEVAL VEHICLES MAY BE INCORPORATED INTO THE VEHICLE EQUIPPED WITH THE TRUCK MOUNTED ATTENUATOR. CONES SHOULD BE PLACED 100' APART.

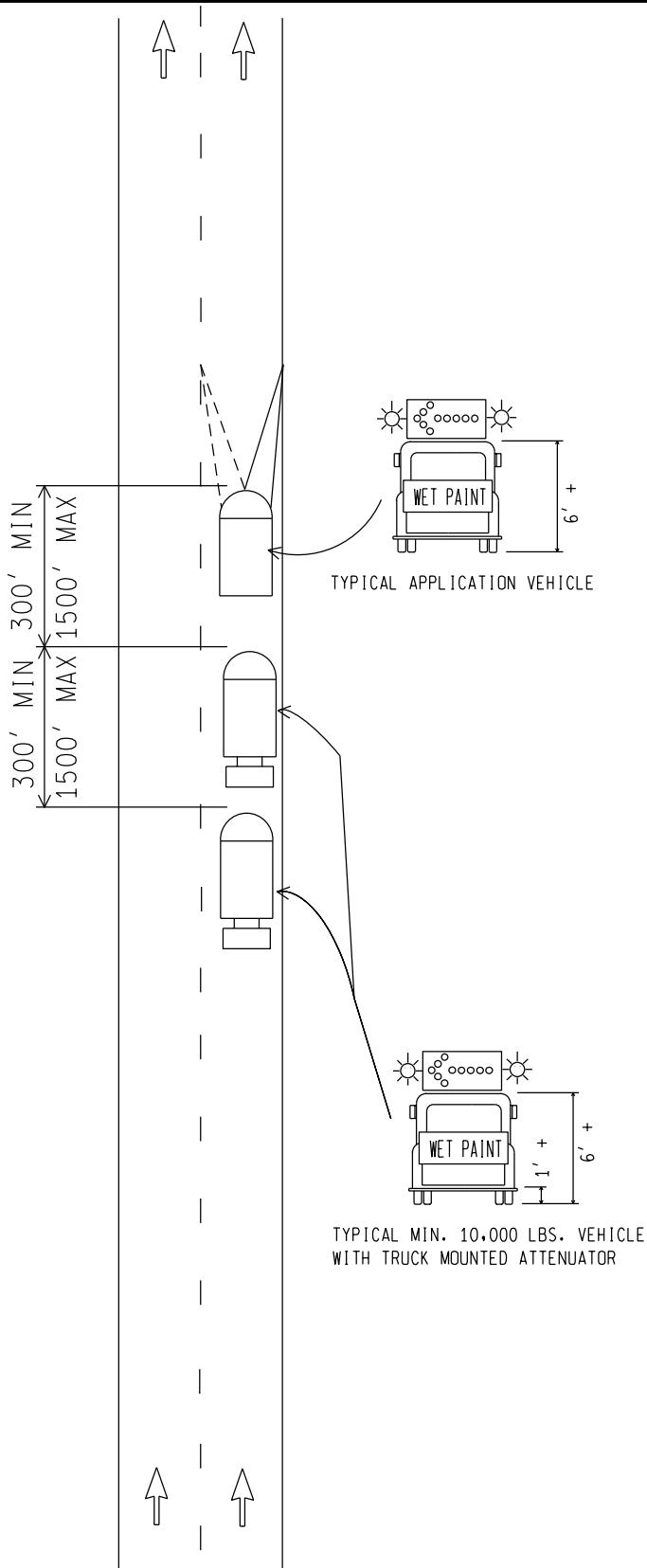
6. DASHED LINE DENOTES OPTIONAL VEHICLE.

18. LANE LINE MAY BE APPLIED AT THE SAME TIME AS THE CENTER LINE. LANE LINE SHALL NOT BE PLACED FROM THE RIGHT LANE.

20. REFER TO PMC22e FOR ADDITIONAL CONVOY SIGNING REQUIREMENTS



1. ALL VEHICLES SHALL BE EQUIPPED WITH:
  - a. TWO ROTATING YELLOW BEACONS OR STROBES VISIBLE FROM ANY APPROACH ANGLE
  - b. TYPE B OR C FLASHING ARROW PANEL AS SHOWN
  - c. "WET PAINT" SIGN AS SHOWN
2. ATTENUATED VEHICLE(S) SHALL WEIGH AT LEAST 10,000 LBS. AND BE LOCATED AS SHOWN.
3. BOTH THE CONE PLACEMENT AND CONE RETRIEVAL VEHICLES MAY BE INCORPORATED INTO THE VEHICLE EQUIPPED WITH THE TRUCK MOUNTED ATTENUATOR. CONES SHOULD BE PLACED 100' APART.
6. DASHED LINE DENOTES OPTIONAL VEHICLE.
18. LANE LINE MAY NOT BE APPLIED AT THE SAME TIME AS THE CENTER LINE IN 3 LANE NON-FREWAY SECTIONS.
20. REFER TO PMC22e FOR ADDITIONAL CONVOY SIGNING REQUIREMENTS

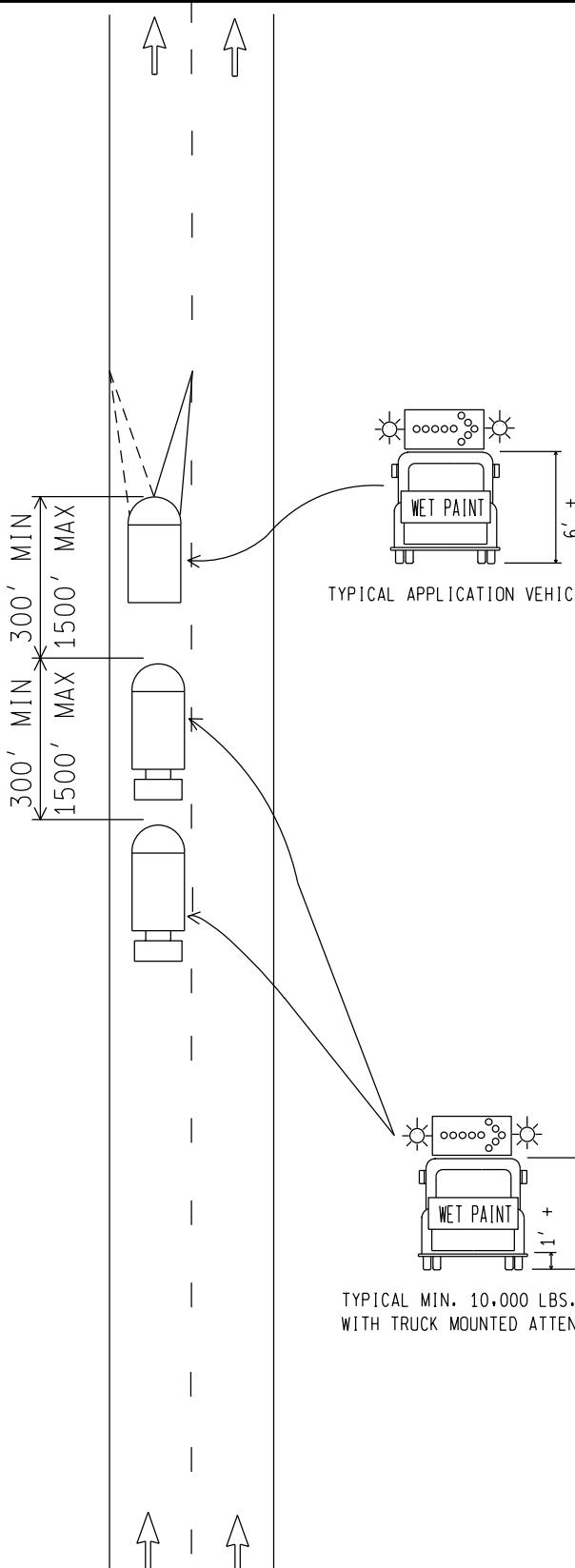


1. ALL VEHICLES SHALL BE EQUIPPED WITH:
  - a. TWO ROTATING YELLOW BEACONS OR STROBES VISIBLE FROM ANY APPROACH ANGLE
  - b. TYPE B OR C FLASHING ARROW PANEL AS SHOWN
  - c. "WET PAINT" SIGN AS SHOWN
2. ATTENUATED VEHICLE(S) SHALL WEIGH AT LEAST 10,000 LBS. AND BE LOCATED AS SHOWN.
4. ILLUSTRATED CONVOY IS ALSO APPLICABLE FOR MARKING LEFT EDGE LINE, EXCEPT CONVOY VEHICLES SHALL OCCUPY LEFT LANE AND USE RIGHT DIRECTIONAL FLASHING ARROW.

20. REFER TO PMC22e FOR ADDITIONAL CONVOY SIGNING REQUIREMENTS



PAVEMENT MARKING CONVOY  
SPRAYABLE THERMOPLASTIC  
TYPICAL FOR  
FREEWAY EDGELINE  
(ALL REGIONS)



1. ALL VEHICLES SHALL BE EQUIPPED WITH:
  - a. TWO ROTATING YELLOW BEACONS OR STROBES VISIBLE FROM ANY APPROACH ANGLE
  - b. TYPE B OR C FLASHING ARROW PANEL AS SHOWN
  - c. "WET PAINT" SIGN AS SHOWN

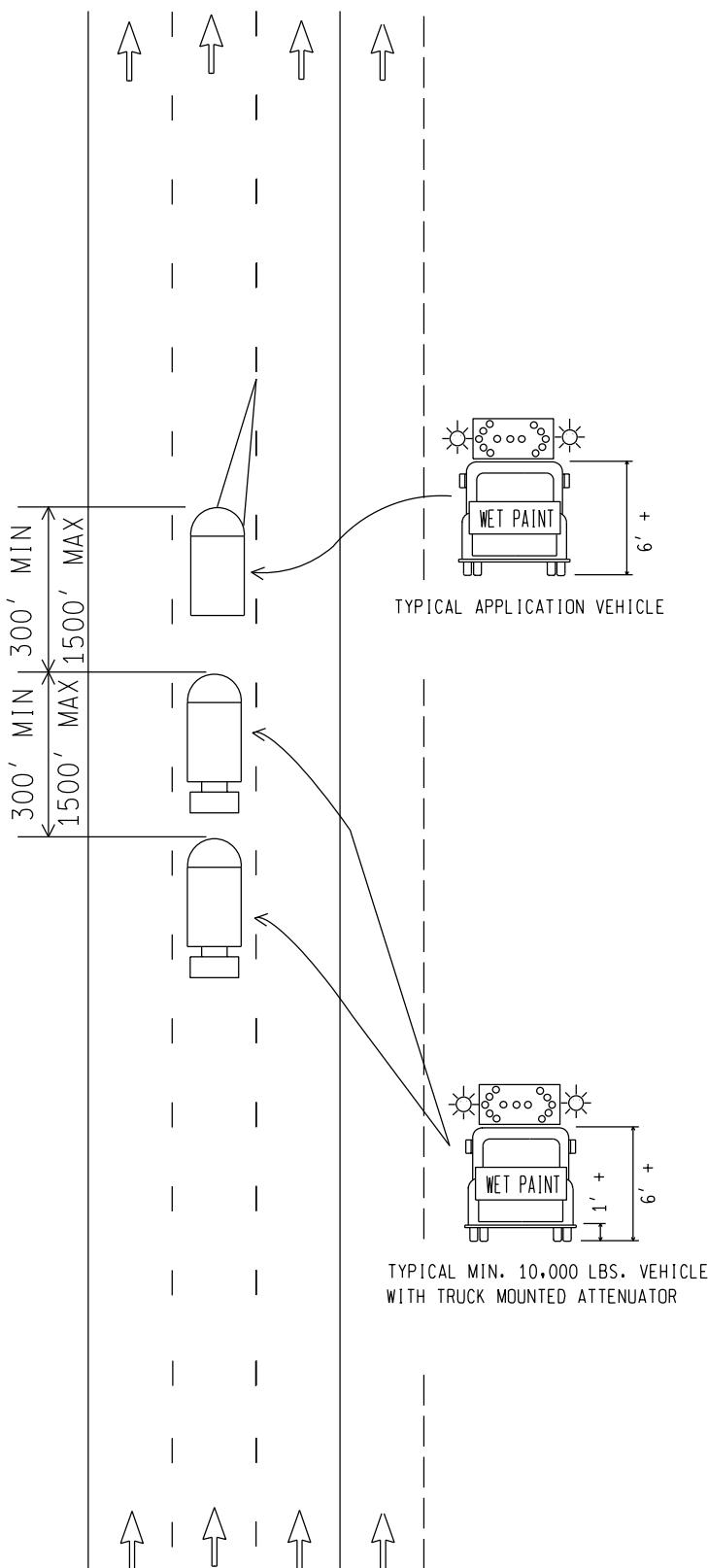
2. ATTENUATED VEHICLE(S) SHALL WEIGH AT LEAST 10,000 LBS. AND BE LOCATED AS SHOWN.

5. LANE LINE MAY BE APPLIED AT THE SAME TIME AS LEFT EDGE LINE. LANE LINE SHALL NOT BE PLACED FROM RIGHT LANE.

20. REFER TO PMC22e FOR ADDITIONAL CONVOY SIGNING REQUIREMENTS



PAVEMENT MARKING CONVOY  
SPRAYABLE THERMOPLASTIC  
TYPICAL FOR FREEWAY  
LANE LINE  
(ALL REGIONS)



1. ALL VEHICLES SHALL BE EQUIPPED WITH:
  - a. TWO ROTATING YELLOW BEACONS OR STROBES VISIBLE FROM ANY APPROACH ANGLE
  - b. TYPE B OR C FLASHING ARROW PANEL AS SHOWN
  - c. "WET PAINT" SIGN AS SHOWN

2. ATTENUATED VEHICLE(S) SHALL WEIGH AT LEAST 10,000 LBS. AND BE LOCATED AS SHOWN.

11. ILLUSTRATED CONVOY IS APPLICABLE FOR APPLYING TWO LANE LINES OR RIGHT LANE LINE ONLY.

12. LEFT LANE LINE MAY BE STRIPED AT THE SAME TIME AS THE LEFT EDGE LINE. LEFT LANE LINE SHALL NOT BE PLACED FROM THE RIGHT LANE.

20. REFER TO PMC22e FOR ADDITIONAL CONVOY SIGNING REQUIREMENTS

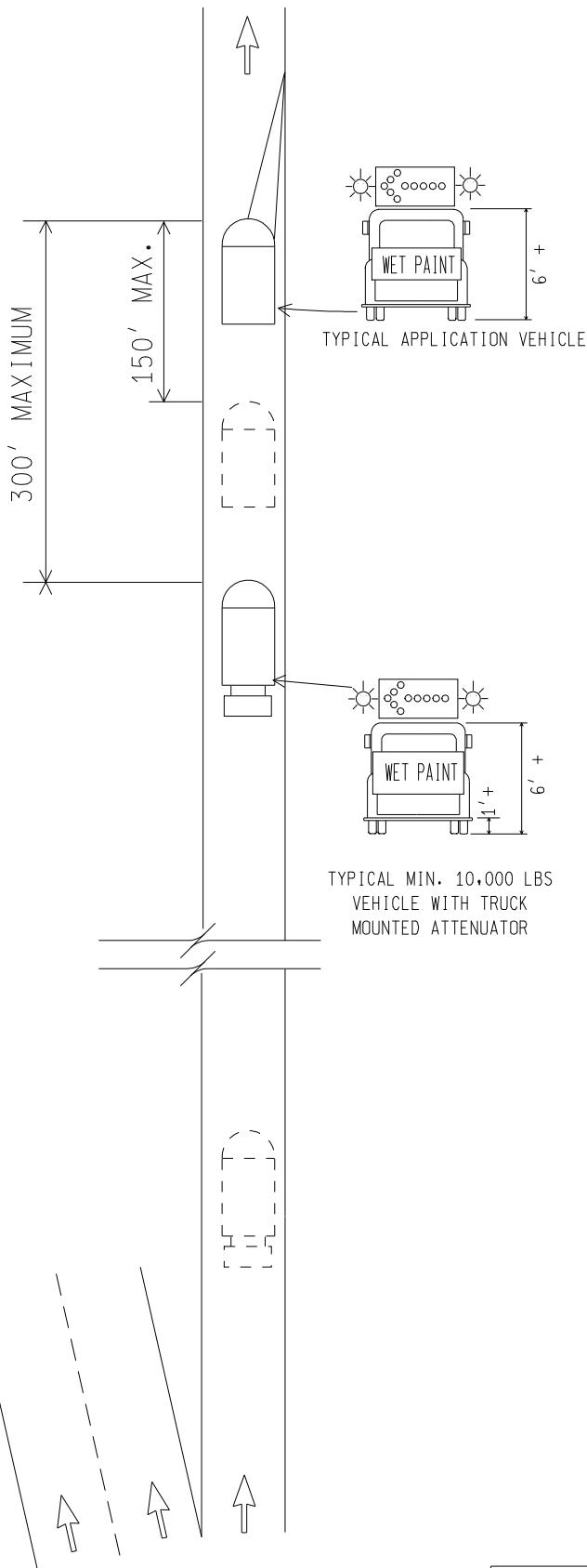


PAVEMENT MARKING CONVOY  
SPRAYABLE THERMOPLASTIC  
TYPICAL FOR  
MULTIPLE FREEWAY LANE LINES  
(ALL REGIONS)

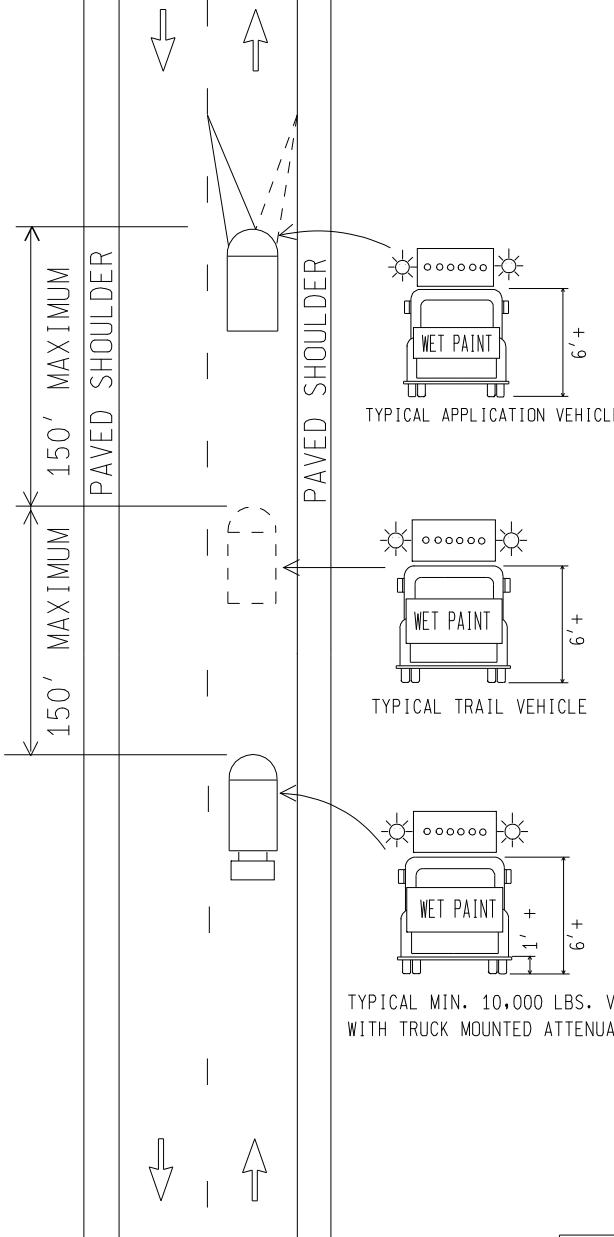
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PMC16e

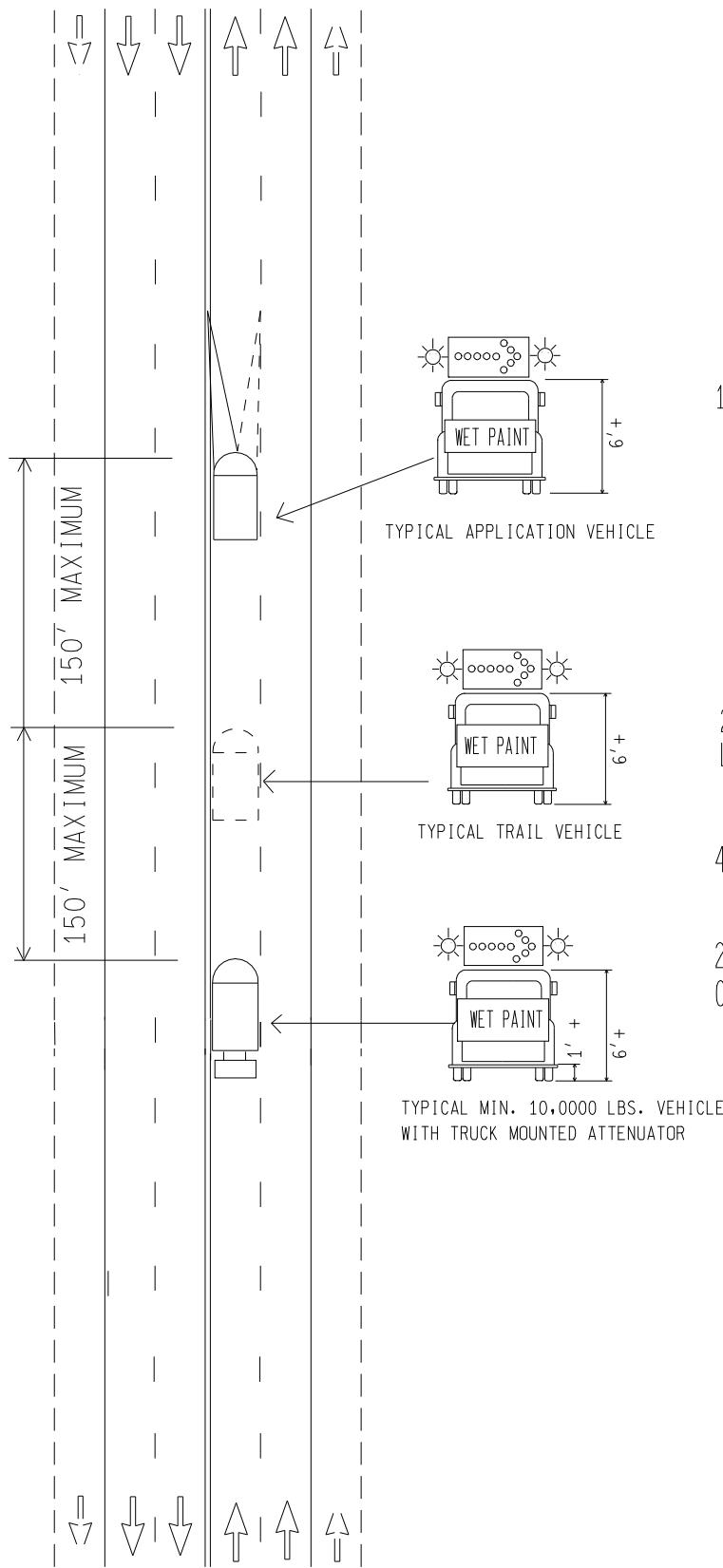
SHEET  
1 OF 1



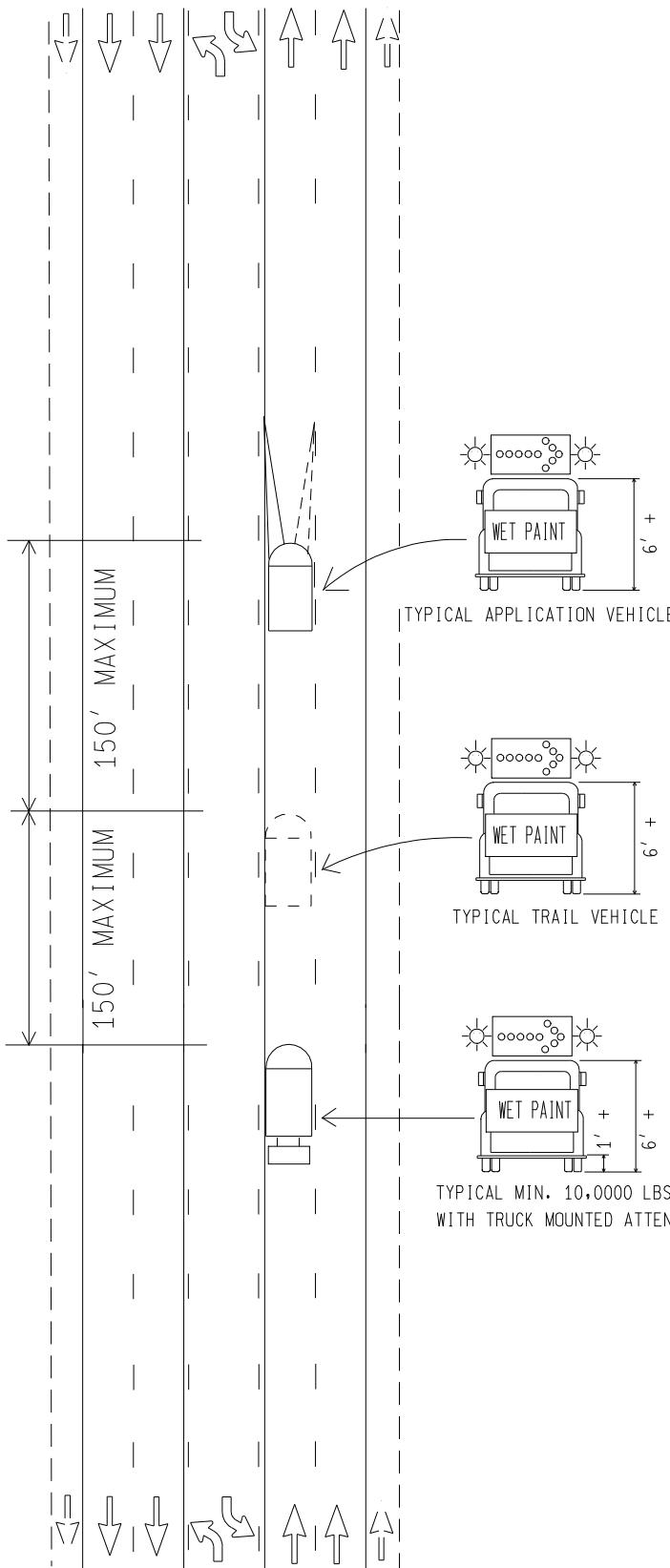
1. ALL VEHICLES SHALL BE EQUIPPED WITH:
  - a. TWO ROTATING YELLOW BEACONS OR STROBES VISIBLE FROM ANY APPROACH ANGLE
  - b. TYPE B OR C FLASHING ARROW PANEL AS SHOWN
  - c. "WET PAINT" SIGN AS SHOWN
2. ATTENUATED VEHICLE(S) SHALL WEIGH AT LEAST 10,000 LBS. AND BE LOCATED AS SHOWN.
- 4a. ILLUSTRATED CONVOY IS ALSO APPLICABLE FOR MARKING RAMP (LEFT) EDGE LINE, EXCEPT CONVOY VEHICLES SHALL OCCUPY LEFT SIDE OF RAMP AND USE RIGHT DIRECTIONAL FLASHING ARROW.
6. DASHED LINE DENOTES VEHICLE.
8. APPLICATION OF THE SECOND TRUCK MOUNTED ATTENUATOR IS BASED ON RAMP DESIGN AND SHALL BE DETERMINED BY THE CONTRACTOR.
20. REFER TO PMC22e FOR ADDITIONAL CONVOY SIGNING REQUIREMENTS



1. ALL VEHICLES SHALL BE EQUIPPED WITH:
  - a. TWO ROTATING YELLOW BEACONS OR STROBES VISIBLE FROM ANY APPROACH ANGLE
  - b. TYPE B OR C FLASHING ARROW PANEL AS SHOWN
  - c. "WET PAINT" SIGN AS SHOWN
2. ATTENUATED VEHICLE(S) SHALL WEIGH AT LEAST 10,000 LBS. AND BE LOCATED AS SHOWN.
6. DASHED LINE DENOTES OPTIONAL VEHICLE.
15. WHERE SHOULDERS ARE NARROW AND INSUFFICIENT WIDTH EXISTS TO ALLOW PASSING ON THE RIGHT, THE CONVOY SHALL CEASE OPERATION AND PULL OFF THE ROADWAY TO ALLOW QUEUED TRAFFIC TO PASS AT REASONABLE INTERVALS.
20. REFER TO PMC22e FPOR ADDITIONAL CONVOY SIGNING REQUIREMENTS



1. ALL VEHICLES SHALL BE EQUIPPED WITH:
  - a. TWO ROTATING YELLOW BEACONS OR STROBES VISIBLE FROM ANY APPROACH ANGLE
  - b. TYPE B OR C FLASHING ARROW PANEL AS SHOWN
  - c. "WET PAINT" SIGN AS SHOWN
2. ATTENUATED VEHICLE(S) SHALL WEIGH AT LEAST 10,000 LBS. AND BE LOCATED AS SHOWN.
4. DASHED LINE DENOTES OPTIONAL VEHICLE.
20. REFER TO PMC22e FPOR ADDITIONAL CONVOY SIGNING REQUIREMENTS



1. ALL VEHICLES SHALL BE EQUIPPED WITH:
  - a. TWO ROTATING YELLOW BEACONS OR STROBES VISIBLE FROM ANY APPROACH ANGLE
  - b. TYPE B OR C FLASHING ARROW PANEL AS SHOWN
  - c. "WET PAINT" SIGN AS SHOWN
2. ATTENUATED VEHICLE(S) SHALL WEIGH AT LEAST 10,000 LBS. AND BE LOCATED AS SHOWN.
6. DASHED LINE DENOTES OPTIONAL VEHICLE.

20. REFER TO PMC22e FPOR ADDITIONAL CONVOY SIGNING REQUIREMENTS

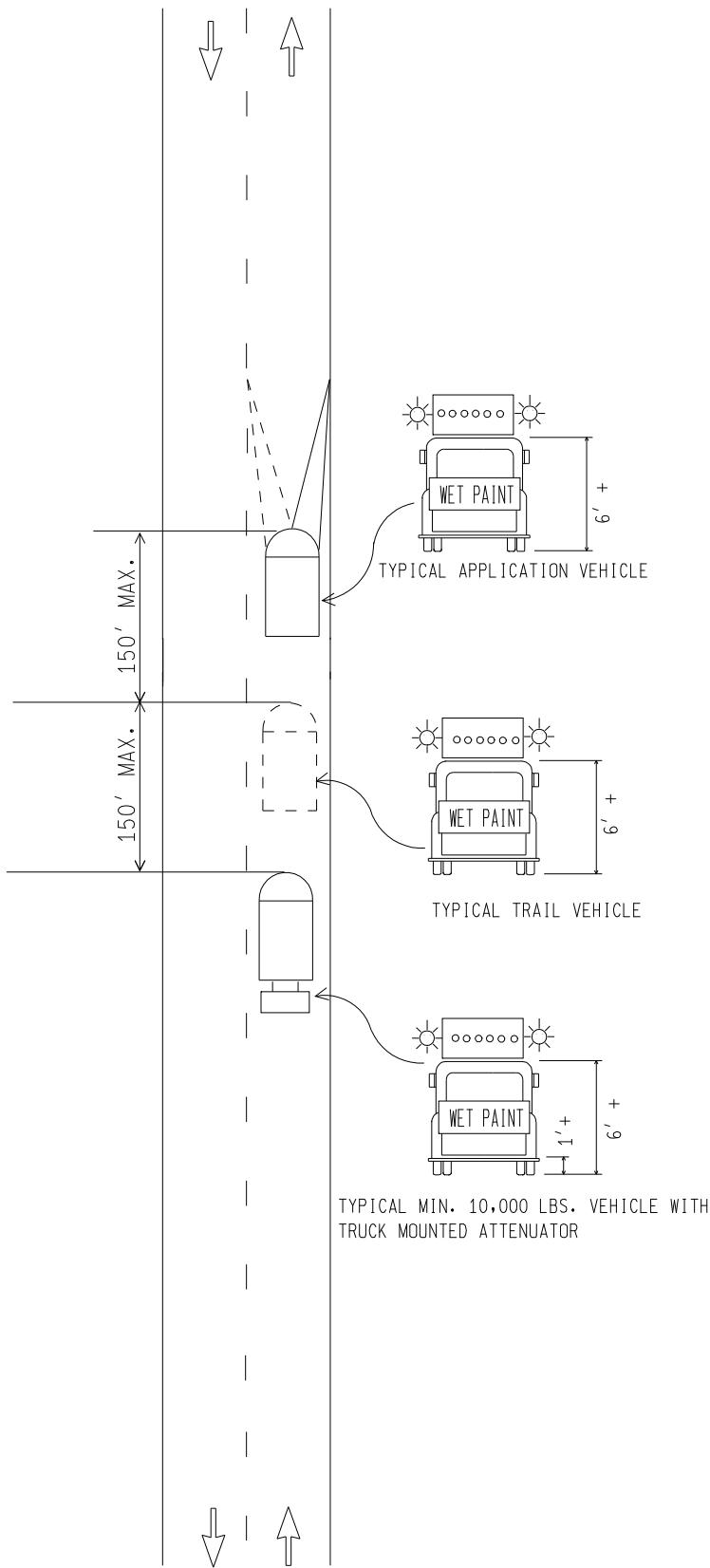


TRAFFIC AND SAFETY  
DIVISION

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Drawn by: KBK Page 65 of 149 Rev. Date: 11/17/2009 KL

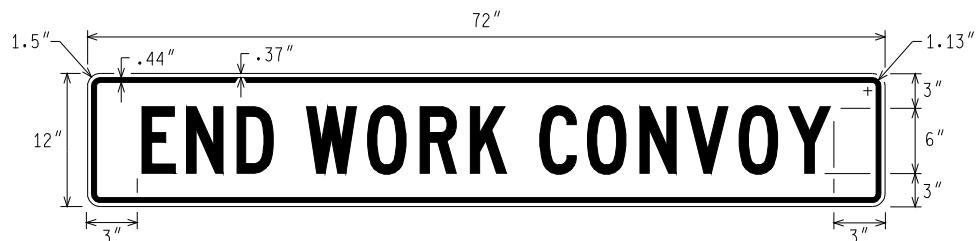
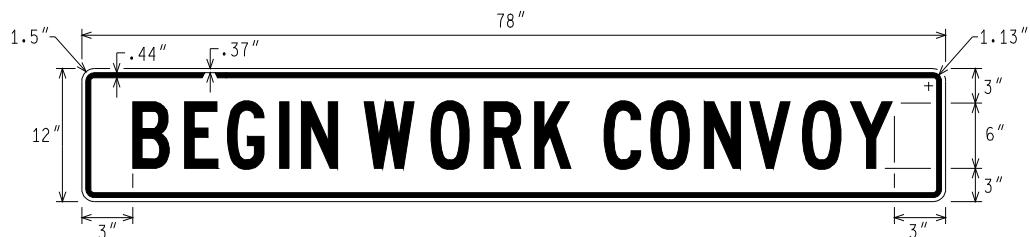
PAVEMENT MARKING CONVOY  
SPRAYABLE THERMOPLASTIC  
TYPICALS FOR  
CENTER LANE FOR LEFT TURN AND  
NON-FREEWAY LANELINES (ALL REGIONS)

PMC20e SHEET 1 OF 1



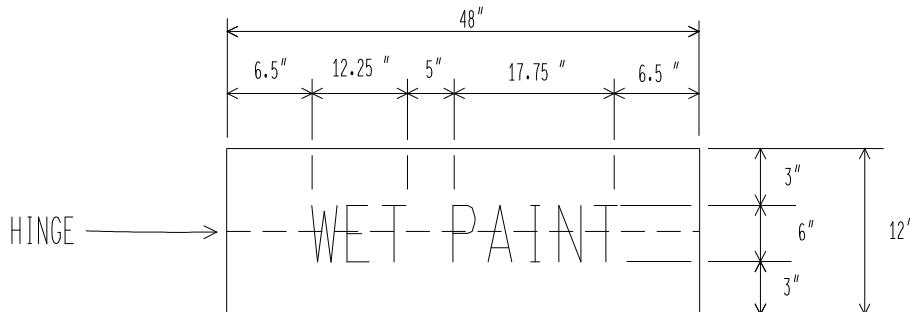
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  - a. TWO ROTATING YELLOW BEACONS OR STROBES VISIBLE FROM ANY APPROACH ANGLE
  - b. TYPE B OR C FLASHING ARROW PANEL AS SHOWN
  - c. "WET PAINT" SIGN AS SHOWN
2. ATTENUATED VEHICLE(S) SHALL WEIGH AT LEAST 10,000 LBS. AND BE LOCATED AS SHOWN.
6. DASHED LINE DENOTES OPTIONAL VEHICLE.
13. ON ROADWAYS WITH TWO OR MORE LANES IN EACH DIRECTION, THE ILLUSTRATED CONVOY IS APPLICABLE EXCEPT LEFT DIRECTIONAL FLASHING ARROW PANEL SHALL BE USED.
20. REFER TO PMC22e FPOR ADDITIONAL CONVOY SIGNING REQUIREMENTS

## PAVEMENT MARKING SIGNS



BEGIN/END CONVOY SIGNS REQUIRED ON FIRST/LAST VEHICLE, RESPECTIVELY.

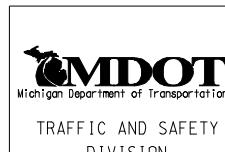
NOTE: BEGIN/END CONVOY SIGNS SHALL HAVE BLACK LETTERS ON A REFLECTIVE WHITE BACKGROUND PER SECTION 9.22 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION



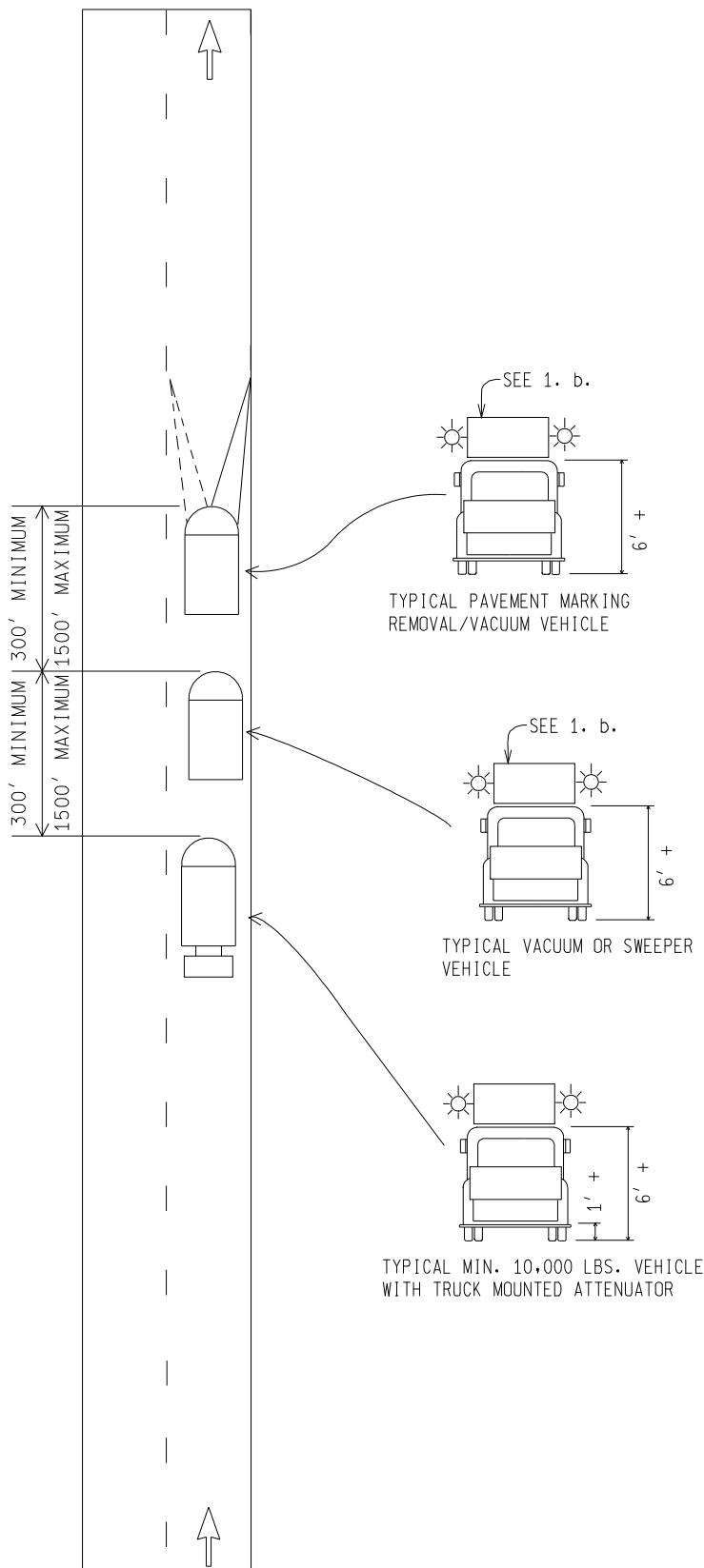
HORIZONTAL HINGE TO PERMIT FOLDING TOP HALF OF SIGN DOWN WHEN MARKING OPERATIONS ARE NOT IN PROGRESS. POSITION HINGE SO AS TO MINIMIZE SPLITTING HORIZONTAL ELEMENTS OF "E" AND "A".

HINGED SIGN REQUIRED ON FRONT OF APPLICATION VEHICLE IN ALL PAINTING CONVOYS WHERE THERE IS ONCOMING TRAFFIC.

NOTE: WET PAINT SIGN SHALL HAVE BLACK LETTERS ON A REFLECTORIZED ORANGE BACKGROUND PER SECTION 9.22 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.



PAVEMENT MARKING CONVOY  
TYPICAL FOR  
SIGNS (ALL REGIONS)



1. ALL VEHICLES SHALL BE EQUIPPED WITH:
  - a. TWO ROTATING YELLOW BEACONS OR STROBES VISIBLE FROM ANY APPROACH ANGLE.
  - \*b. TYPE B OR C FLASHING ARROW PANEL IN APPROPRIATE MODE.
- \*2 WAY TRAFFIC - BAR MODE  
1 WAY TRAFFIC - RIGHT OR LEFT ARROW MODE
2. ATTENUATED VEHICLE(S) SHALL WEIGH AT LEAST 10,000 LBS. AND BE LOCATED AS SHOWN.
15. WHERE SHOULDERS ARE NARROW AND INSUFFICIENT WIDTH EXISTS TO ALLOW PASSING ON THE RIGHT, THE CONVOY SHALL CEASE OPERATION AND PULL OFF THE ROADWAY TO ALLOW QUEUED TRAFFIC TO PASS AT REASONABLE INTERVALS.
- NOTE - FOLLOW VEHICLE WITH TRUCK MOUNTED ATTENUATOR NOT REQUIRED IN LANE CLOSURE AREA.
20. REFER TO PMC22e FPOR ADDITIONAL CONVOY SIGNING REQUIREMENTS

TYPICAL PLAN NUMBER	IN THIS CONTRACT	TITLE	TOTAL SHEETS
PMC1e		PAVEMENT MARKING CONVOY WATERBORNE PAINT TYPICAL FOR FREEWAY EDGELINE WITH CONES (ALL REGIONS)	1
PMC3e		PAVEMENT MARKING CONVOY WATERBORNE PAINT TYPICAL FOR FREEWAY EDGELINE WITHOUT CONES (ALL REGIONS)	1
PMC4e		PAVEMENT MARKING CONVOY WATERBORNE PAINT TYPICAL FOR RAMP EDGELINE WITH CONES (ALL REGIONS)	1
PMC5e		OBsolete	1
PMC7e		PAVEMENT MARKING CONVOY WATERBORNE PAINT TYPICAL FOR FREEWAY LANELINE WITHOUT CONES (ALL REGIONS)	1
PMC9e		PAVEMENT MARKING CONVOY WATERBORNE PAINT TYPICAL FOR MULTIPLE FREEWAY LANELINES WITHOUT CONES (ALL REGIONS)	1
PMC10e		PAVEMENT MARKING CONVOY WATERBORNE PAINT TYPICAL FOR NON-FREEWAY EDGELINES WITH CONES (ALL REGIONS)	1
PMC11e		PAVEMENT MARKING CONVOY WATERBORNE PAINT TYPICAL FOR 2-LANE 2-WAY ROADWAY CENTERLINE (ALL REGIONS)	1
PMC12e		PAVEMENT MARKING CONVOY WATERBORNE PAINT TYPICAL FOR CENTERLINE OF 4 OR 6 LANE 2-WAY ROADWAY (ALL REGIONS)	1
PMC13e		PAVEMENT MARKING CONVOY WATERBORNE PAINT TYPICAL FOR CENTER LANE FOR LEFT TURN AND NON-FREEWAY LANELINES (ALL REGIONS)	1
PMC14e		PAVEMENT MARKING CONVOY SPRAYABLE THERMOPLASTIC TYPICAL FOR FREEWAY EDGELINE (ALL REGIONS)	1
PMC15e		PAVEMENT MARKING CONVOY SPRAYABLE THERMOPLASTIC TYPICAL FOR FREEWAY LANELINE (ALL REGIONS)	1

pw:rd/tr/typ/final/pave markings/PMCindex 04/30/2012 lmf

 Michigan Department of Transportation PREPARED BY TRAFFIC & SAFETY DRAWN BY: KBK CHECKED BY: JM	Page 69 of 149 ENGINEER OF TRAFFIC AND SAFETY	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS TYPICAL PLAN FOR <b>PAVEMENT MARKING CONVOY TYPICAL PLANS INDEX</b>	
		4/30/12 PLAN DATE	ENGLISH SHEET 1 of 2



DISTANCE BETWEEN TRAFFIC SIGNS, "D"

"D" DISTANCES	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)										
	25	30	35	40	45	50	55	60	65	70	75
D (FEET)	250	300	350	400	450	500	550	600	650	700	750

GUIDELINES FOR LENGTH OF LONGITUDINAL BUFFER SPACE, "B"

"B" LENGTHS	SPEED*, MPH (PRIOR TO WORK AREA)											
	20	25	30	35	40	45	50	55	60	65	70	75
B (FEET)	33	50	83	132	181	230	279	329	411	476	542	625

\* POSTED SPEED, OFF-PEAK 85TH PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED.

MINIMUM MERGING TAPER LENGTH, "L" (FEET)

OFFSET (FEET)	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)										
	25	30	35	40	45	50	55	60	65	70	75
1	11	15	21	27	45	50	55	60	65	70	75
2	21	30	41	54	90	100	110	120	130	140	150
3	32	45	62	80	135	150	165	180	195	210	225
4	42	60	82	107	180	200	220	240	260	280	300
5	53	75	103	134	225	250	275	300	325	350	375
6	63	90	123	160	270	300	330	360	390	420	450
7	73	105	143	187	315	350	385	420	455	490	525
8	84	120	164	214	360	400	440	480	520	560	600
9	94	135	184	240	405	450	495	540	585	630	675
10	105	150	205	267	450	500	550	600	650	700	750
11	115	165	225	294	495	550	605	660	715	770	825
12	125	180	245	320	540	600	660	720	780	840	900
13	136	195	266	347	585	650	715	780	845	910	975
14	146	210	286	374	630	700	770	840	910	980	1050
15	157	225	307	400	675	750	825	900	975	1050	1125

NOT TO SCALE



NOT TO SCALE

FILE: 101-GEN-SPACING-CHARTS.dgn

MAINTAINING TRAFFIC TYPICAL

NO:

101-GEN-  
SPACING-CHARTS

"B", "D" AND "L" TABLES  
CHANNELIZING DEVICE SPACING,  
SIGN BORDER KEY, AND ROLL-AHEAD SPACING

DATE: MAY 2021

SHEET:

1 OF 3

THE FORMULAS FOR THE MINIMUM LENGTH OF A MERGING TAPER IN DERIVING THE "L" VALUES SHOWN IN THE ABOVE TABLES ARE AS FOLLOWS:

$$"L" = \frac{W \times S^2}{60} \quad \text{WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 40 MPH OR LESS}$$

$$"L" = W \times S \quad \text{WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 45 MPH OR GREATER}$$

L = MINIMUM LENGTH OF MERGING TAPER

S = POSTED SPEED LIMIT IN MPH PRIOR TO WORK AREA

W = WIDTH OF OFFSET

#### TYPES OF TAPERS

##### UPSTREAM TAPERS

MERGING TAPER	L - MINIMUM
SHIFTING TAPER	1/2 L - MINIMUM
SHOULDER TAPER	1/3 L - MINIMUM
2 TO 1 LANE ROAD TAPER	100' - MAXIMUM

##### DOWNSTREAM TAPERS

(USE IS RECOMMENDED)

#### TAPER LENGTH

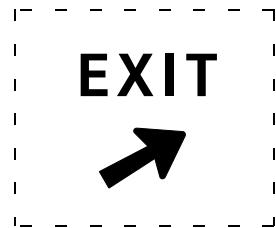
L - MINIMUM	1/2 L - MINIMUM
1/3 L - MINIMUM	100' - MAXIMUM
100' (PER LANE)	

#### MAXIMUM SPACING FOR CHANNELIZING DEVICES

WORK ZONE SPEED LIMIT	DRUM AND 42" DEVICE SPACING (FT)		NIGHTTIME 42" DEVICE SPACING (FT)	
	TAPE	TANGENT	TAPE	TANGENT
< 45 MPH	1 x SPEED LIMIT	2 x SPEED LIMIT	25 FEET	50 FEET
≥ 45 MPH	50 FEET	100 FEET	25 FEET	50 FEET

#### SIGN OUTLINE KEY

DASHED OUTLINES INDICATE A SIGN THAT EXISTS ON SITE, AND NEEDS TO BE COVERED.



SOLID OUTLINES INDICATE A SIGN THAT IS TO BE PLACED ON THE PROJECT



NOT TO SCALE



NOT TO SCALE

FILE: 101-GEN-SPACING-CHARTS.dgn

MAINTAINING TRAFFIC TYPICAL

NO: 101-GEN-  
SPACING-CHARTS

"B", "D" AND "L" TABLES  
CHANNELIZING DEVICE SPACING  
SIGN BORDER KEY AND ROLL-AHEAD SPACING

DATE: MAY 2021  
SHEET:

2 OF 3

GUIDELINES FOR ROLL-AHEAD DISTANCES FOR TMA VEHICLES – TEST LEVEL 2

WEIGHT OF TMA VEHICLE	PREVAILING SPEED (POSTED SPEED PRIOR TO WORK ZONE)	ROLL-AHEAD DISTANCE* (DISTANCE FROM FRONT OF TMA VEHICLE TO WORK AREA)
5.5 TONS (STATIONARY)	40 MPH OR LESS	25 FT

\* ROLL-AHEAD DISTANCES ARE CALCULATED USING A 4,410 POUND IMPACT VEHICLE WEIGHT.

GUIDELINES FOR ROLL-AHEAD DISTANCES FOR TMA VEHICLES – TEST LEVEL 3

WEIGHT OF TMA VEHICLE	PREVAILING SPEED (POSTED SPEED PRIOR TO WORK ZONE)	ROLL-AHEAD DISTANCE* (DISTANCE FROM FRONT OF TMA VEHICLE TO WORK AREA)
5 TONS (MOBILE)	45 MPH	100 FT
	50-55 MPH	150 FT
	60-75 MPH	175 FT
12 TONS (STATIONARY)	45 MPH	25 FT
	50-55 MPH	25 FT
	60-75 MPH	50 FT

\* ROLL-AHEAD DISTANCES ARE CALCULATED USING A 10,000 POUND IMPACT VEHICLE WEIGHT.



NOT TO SCALE

FILE: 101-GEN-SPACING-CHARTS.dgn

MAINTAINING TRAFFIC TYPICAL  
NO: 101-GEN-  
SPACING-CHARTS

"B", "D" AND "L" TABLES  
CHANNELIZING DEVICE SPACING  
SIGN BORDER KEY AND ROLL AHEAD SPACING

DATE: MAY 2021  
SHEET: 3 OF 3

# THE FOLLOWING NOTES APPLY IF CALLED FOR ON THE TRAFFIC TYPICAL

## GENERAL NOTES

G1: SEE GEN-SPACING-CHARTS FOR COMMON VALUES INCLUDING:  
 D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES  
 L = MINIMUM LENGTH OF TAPER  
 B = LENGTH OF LONGITUDINAL BUFFER  
 ROLL AHEAD DISTANCE

G2: DISTANCE BETWEEN SIGNS, "D", THE VALUES FOR WHICH ARE SHOWN IN TYPICAL GEN-KEY ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.

G3: ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING MUST MEET NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM REPORT 350 (NCHRP 350) TEST LEVEL 3, OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASHP) TL-3 AS WELL AS THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.

G4: DO NOT STORE EQUIPMENT, MATERIALS OR PERFORM WORK IN ESTABLISHED BUFFER AREAS.

G5: ALL EXISTING PAVEMENT MARKINGS WHICH ARE IN CONFLICT WITH EITHER PROPOSED CHANGES IN TRAFFIC PATTERNS OR PROPOSED TEMPORARY TRAFFIC MARKINGS SHALL BE REMOVED BEFORE ANY CHANGE IS MADE IN THE TRAFFIC PATTERN. EXCEPTION WILL BE MADE FOR TRAFFIC PATTERNS FOR WORK LESS THAN THREE DAYS THAT ARE ADEQUATELY DELINEATED BY OTHER TRAFFIC CONTROL DEVICES.

## SIGN NOTES

S1: ALL NON-APPLICABLE SIGNING WITHIN THE CIA MUST BE MODIFIED TO FIT CONDITIONS, COVERED, OR REMOVED. FOR GUIDANCE SEE THE WORK ZONE SAFETY AND MOBILITY MANUAL, SECTIONS 6.01.09 AND 6.01.10.

S2: R5-18b SIGNS ARE ONLY REQUIRED ON FREEWAY PROJECTS WITH A DURATION OF 15 DAYS OR LONGER OR NON-FREEWAY PROJECTS WITH A DURATION OF 90 DAYS OR LONGER. TO APPLY THIS TYPICAL WITHOUT R5-18b SIGNS, REMOVE THE SIGNS AND CONSOLIDATE THE SEQUENCE AS APPROPRIATE.

S3: R5-18c IS ONLY REQUIRED IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. OMIT THIS SIGN IN SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE.

S4: ADDITIONAL SIGNING AND/OR ELONGATED SIGNING SEQUENCES SHOULD BE USED WHEN TRAFFIC VOLUMES ARE SIGNIFICANT ENOUGH TO CREATE BACKUPS BEYOND THE W20-5 SIGNS.

S5: PLACE ADDITIONAL SPEED LIMIT SIGNS REFLECTING THE WORK ZONE SPEED AFTER EACH MAJOR CROSSROAD THAT INTERSECTS THE WORK ZONE, OR AFTER EACH ENTRANCE RAMP THAT COMES ONTO THE FREEWAY WHERE THE REDUCED SPEED IS IN EFFECT. PLACE ADDITIONAL SPEED LIMIT SIGNS AT INTERVALS ALONG THE ROADWAY SUCH THAT NO SPEED LIMIT SIGNS ARE MORE THAN 2 MILES APART. WHEN REDUCED SPEED LIMITS ARE UTILIZED IN THE WORK AREA, PLACE ADDITIONAL SPEED LIMIT SIGNS RETURNING TRAFFIC TO ITS NORMAL SPEED BEYOND THE LIMITS OF THE WORK AREA AS INDICATED. IF PERMANENT SIGNS DISPLAYING THE CORRECT SPEED LIMIT ARE POSTED, OMIT ALL W3-5b AND R2-1 SIGNS AND REDUCE SPACING ACCORDINGLY.

S6: FABRICATE SPECIAL SIGNS IN ACCORDANCE WITH CURRENT SIGNING DESIGN STANDARDS.

S7: PLACE ADDITIONAL R8-3 SIGNS AT A MAXIMUM 500' SPACING THROUGHOUT THE WORK ZONE.

S8: WHEN SPEED LIMIT SIGNS CANNOT BE PLACED SIDE BY SIDE AS SHOWN, PLACE THEM "D" DISTANCE APART.

S9: STOP SIGNS NOT REQUIRED IF SIGNALS ARE ON 4-WAY FLASHING RED. STOP AHEAD SIGNS ARE NOT REQUIRED IF THERE IS ADEQUATE VISIBILITY OF THE STOP SIGN OR IF SIGNALS ARE BEING USED TO CONTROL TRAFFIC.

S10: PLACE REDUCED SPEED ZONE AHEAD SIGN (W3-5b) HERE WHEN USING A SPEED REDUCTION IN THIS DIRECTION.

S11: THE NUMBER OF W1-6 SHIFT SIGNS TO PLACE FOR A SHIFT IS AS FOLLOWS:  
 SHIFTS 4FT OR LESS, PLACE ONE W1-6(R)(L)  
 SHIFTS 5FT TO 12FT, PLACE TWO W1-6(R)(L)  
 SHIFTS MORE THAN 12FT, PLACE THREE OR MORE W1-6(R)(L) SIGNS DEPENDING UPON LENGTH OF SHIFT AND AS PER THE ENGINEER.

S12: PLACE R2-1 SIGNS AS DETAILED IN NOTE S5 WHEN THERE IS A SPEED REDUCTION IN THIS DIRECTION

## TRAFFIC REGULATOR NOTES

TR1: TRAFFIC REGULATORS MUST FOLLOW ALL THE REQUIREMENTS IN THE STANDARD SPECIFICATIONS, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS, THE CURRENT VERSIONS OF THE TRAFFIC REGULATOR'S INSTRUCTION MANUAL AND THE VIDEO "HOW TO SAFELY REGULATE TRAFFIC IN MICHIGAN". THE MAXIMUM DISTANCE BETWEEN THE TRAFFIC REGULATORS IS DETERMINED BY THE ROADWAY ADT, GEOMETRICS, AND AS DIRECTED BY THE ENGINEER.

TR2: PROVIDE APPROPRIATE BALLOON LIGHTING TO SUFFICIENTLY ILLUMINATE TRAFFIC REGULATOR'S STATIONS WHEN TRAFFIC REGULATING IS ALLOWED DURING THE HOURS OF DARKNESS.

TR3: PROVIDE EITHER A STOP/SLOW AFAD OR A RED/YELLOW LENS AFAD, MEETING THE REQUIREMENTS OF THE MMUTCD

## TEMPORARY TRAFFIC CONTROL DEVICE NOTES

TCD1: THE MAXIMUM DISTANCE IN FEET BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD NOT EXCEED 1.0 TIMES THE WORK ZONE SPEED LIMIT IN MPH FOR ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT LESS THAN 45 MPH AND SHOULD NOT EXCEED 50 FEET ON ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT OF 45 MPH OR GREATER. THE SPACING FOR 42 INCH CHANNELIZING DEVICE TAPERS ARE NOT TO EXCEED 25 FEET AT NIGHT.

TCD2: THE MAXIMUM DISTANCE IN FEET BETWEEN CHANNELIZING DEVICES IN A TANGENT SHOULD NOT EXCEED TWICE THE WORK ZONE SPEED LIMIT IN MPH FOR ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT LESS THAN 45 MPH AND SHOULD NOT EXCEED 100 FEET ON ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT OF 45 MPH OR GREATER. THE SPACING FOR 42 INCH CHANNELIZING DEVICE TANGENTS ARE NOT TO EXCEED 50 FEET AT NIGHT.

TCD3: TYPE III BARRICADES MUST BE LIGHTED FOR OVERNIGHT CLOSURES.

TCD4: WHEN THE HAUL ROAD IS NOT IN USE, PLACE LIGHTED TYPE III BARRICADES WITH "ROAD CLOSED" EXTENDING COMPLETELY ACROSS THE HAUL ROAD.

TCD5: USE OBJECT MARKER SIGNS IN LIEU OF THE TYPE B HIGH INTENSITY LIGHT SHOWN IN THE STANDARD PLAN FOR TEMPORARY CONCRETE BARRIER (R-53, AND R-126) WHEN USED WITH A TEMPORARY SIGNAL SYSTEM. THE OBJECT MARKERS MUST BE A MINIMUM OF 12 INCHES IN WIDTH AND 36 INCHES IN HEIGHT AND HAVE ORANGE AND WHITE RETROREFLECTIVE SHEETING. THE RETROREFLECTIVE SHEETING MUST HAVE ALTERNATING DIAGONAL ORANGE AND WHITE STRIPES SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES IN THE DIRECTION VEHICULAR TRAFFIC IS TO PASS.

TCD6: PLACE LIGHTED ARROW PANELS AS CLOSE TO THE BEGINNING OF TAPERS AS PRACTICAL, BUT NOT IN A MANNER THAT WILL OBSCURE OR CONFUSE APPROACHING MOTORISTS WHEN PHYSICAL LIMITATIONS RESTRICT PLACEMENT. IN CURBED SECTIONS, IF ARROW BOARD CANNOT BE PLACED BEHIND CURB, PLACE ARROW BOARD IN THE CLOSED LANE AS CLOSE TO THE BEGINNING OF TAPER AS POSSIBLE.

TCD7: ADDITIONAL TYPE III BARRICADES MAY BE REQUIRED TO COMPLETELY CLOSE OFF ROAD FROM EDGE OF PAVEMENT TO EDGE OF PAVEMENT.

TCD8: WHERE THE SHIFTED SECTION IS SHORTER THAN 600 FEET, A DOUBLE REVERSE CURVE SIGN (W24-1) CAN BE USED INSTEAD OF THE FIRST REVERSE CURVE SIGN, AND THE SECOND REVERSE CURVE SIGN CAN BE OMITTED.

TCD9: RUMBLE STRIPS ARE TO BE PLACED AS SPECIFIED IN THE CONTRACT. IF NOT SPECIFIED IN THE CONTRACT, PLACE RUMBLE STRIPS AS SHOWN, AND IN ACCORDANCE WITH THE RUMBLE STRIP MANUFACTURER'S RECOMMENDATIONS. AN ARRAY OF RUMBLE STRIPS CONTAINS THREE RUMBLE STRIPS. PLACE THE RUMBLE STRIPS IN THE ARRAY AT A CONSISTENT DISTANCE, BETWEEN 10' AND 20' APART.

TCD10: SEE THE WORK ZONE SAFETY AND MOBILITY MANUAL, PORTABLE CHANGEABLE MESSAGE SIGN GUIDELINES FOR RECOMMENDED AND CORRECT PCMS MESSAGING. STAGGER PCMS THAT ARE ON OPPOSING SIDES OF THE ROAD 1000 FEET FROM EACH OTHER.

## RAMP NOTES

RMP1: WHEN CONDITIONS ALLOW, E5-1 SIGNS MUST BE REMOVED OR COVERED AND CHANNELIZING DEVICES MUST BE POSITIONED TO ENABLE RAMP TRAFFIC TO DIVERGE IN A FREE MANNER.

RMP2: STOP AND YIELD CONDITIONS SHOULD BE AVOIDED WHENEVER PRACTICAL. WHEN CONDITIONS WARRANT, R1-1 SIGNS MAY BE USED IN PLACE OF R1-2 SIGNS. WHEN R-1 SIGNS ARE USED, W3-1 SIGNS MUST BE USED IN PLACE OF W3-2 SIGNS. CONSIDERATION SHOULD BE GIVEN TO CLOSING THE RAMP TO COMPLETE WORK TO ALLOW AN ADEQUATE MERGE DISTANCE. WORK SHOULD BE EXPEDITED TO AVOID THE STOP AND/OR YIELD CONDITIONS.



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MAINTAINING TRAFFIC TYPICAL

NO:

102-GEN-NOTES

FILE: 102-GEN-NOTES.dgn

TRAFFIC TYPICALS  
NOTE SHEET

DATE: MAY 2022  
SHEET:

1 OF 2

THE FOLLOWING NOTES APPLY IF CALLED FOR ON THE TRAFFIC TYPICAL

**SIGNAL NOTES**

SIG1: EXISTING SIGNAL MUST BE EITHER 4-WAY FLASHING RED, BAGGED, OR TURNED OFF.

SIG2: SIGNAL IS IN OPERATION.

SIG3: DELINEATE THE WORK ZONE AREA WITH 28 INCH CONES FOR DAYTIME WORK, OR 42 INCH CHANNELIZING DEVICES FOR NIGHTTIME WORK.

SIG4: THE CONTRACTOR MUST HAVE A DESIGNATED SPOTTER IF THE AERIAL BUCKET TRUCK IS LOCATED OVER ACTIVE TRAVEL LANES.

SIG5: THE LOWEST POINT OF THE BUCKET MAY NOT TRAVEL BELOW 14 FOOT VERTICAL CLEARANCE. THE CONTRACTOR MUST UTILIZE AN ALTERNATE SET UP, OR PLACE THE INTERSECTION IN A 4 WAY STOP IF THE 14 FOOT VERTICAL CLEARANCE IS COMPROMIZED. USE TRAFFIC REGULATORS TO CONTROL TRAFFIC THROUGH THE INTERSECTION WHEN TRAFFIC IS PLACED IN A 4 WAY STOP.

SIG6: DELINEATE THE TRUCK WITH CHANNELIZING DEVICES. THE POSITION OF THE TRUCK MAY BE MOVED TO FACILITATE WORK.

**MAINTENANCE AND SURVEYING NOTES**

MS1: WHENEVER STOPPING SIGHT DISTANCE EXISTS TO THE REAR, THE SHADOW VEHICLES SHOULD MAINTAIN THE RECOMMENDED DISTANCE FROM THE WORK AREA AND PROCEED AT THE SAME SPEED. THE SHADOW VEHICLE SHOULD SLOW DOWN AND TRAVEL AT A FARTHER DISTANCE TO PROVIDE ADEQUATE SIGHT DISTANCE IN ADVANCE OF VERTICAL OR HORIZONTAL CURVES.

MS2: WORKERS OUTSIDE OF VEHICLES SHOULD WORK WITHIN 150' OF WORK VEHICLES WITH AN ACTIVATED BEACON, BETWEEN THE "BEGIN WORK CONVOY" SIGN AND THE "END WORK CONVOY" SIGN, OR BETWEEN THE "WORK ZONE BEGINS" AND "END ROAD WORK" SIGN.

MS3: WORK OR SHADOW VEHICLES WITH OR WITHOUT A TMA MAY BE USED TO SEPARATE THE WORK SPACE FROM TRAFFIC. IF USED, THE VEHICLES SHOULD BE PARKED ACCORDING TO THE ROLL AHEAD DISTANCE TABLES.

MS4: WORK AND SHADOW VEHICLES SHALL BE APPROPRIATELY EQUIPPED WITH AN ACTIVATED AMBER BEACON.

MS5: WHEN WORKERS ARE OUTSIDE THEIR VEHICLES IN AN EXISTING LANE WHILE A MOBILE OPERATION IS OCCURRING DURING THE NIGHTTIME HOURS, CHANNELIZING DEVICES TO DELINEATE OPEN OR CLOSED LANES AT 50 FT SPACING MUST BE USED. AN EXAMPLE OF AN OPERATION (BUT NOT LIMITED TO) IS THE LAYOUT OF CONCRETE PATCHES.

MS6: W21-6 AND W20-1 SIGNS MAY BE SUBSTITUTED AS DETERMINED BY THE TYPE OF WORK TAKING PLACE AS PER THE ENGINEER.



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MAINTAINING TRAFFIC TYPICAL

NO:

102-GEN-NOTES

TRAFFIC TYPICALS  
NOTE SHEET

DATE:  
MAY 2022  
SHEET:

2 OF 2

## SIGN NUMBER KEY



**EXIT**  
E5-1f  
48" x 48"  
60" x 48"



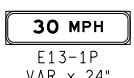
**EXIT OPEN**  
E5-2  
48" x 36"



**EXIT CLOSED**  
E5-2d  
48" x 36"



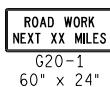
**EXIT ONLY**  
E5-3  
48" x 36"



**30 MPH**  
E13-1P  
VAR x 24"



**20 MPH**  
E13-1dP  
36" x 24"



**ROAD WORK**  
G20-1  
60" x 24"



**END ROAD WORK**  
G20-2  
48" x 24"



**PILOT CAR FOLLOW ME**  
G20-4  
36" x 18"



**1-6d**  
18" x 18"  
24" x 24"  
30" x 30"



**INTERSTATE XX**  
M1-1  
18" x 18"  
24" x 24"  
36" x 36"  
48" x 48"



**INTERSTATE XXX**  
M1-1  
22.5" x 18"  
30" x 24"  
45" x 36"  
60" x 48"



**BUSINESS LOOP XX**  
M1-2  
18" x 18"  
24" x 24"  
36" x 36"  
48" x 48"



**BUSINESS LOOP XXX**  
M1-2  
22.5" x 18"  
30" x 24"  
45" x 36"  
60" x 48"



**BUSINESS SPUR XX**  
M1-3  
18" x 18"  
24" x 24"  
36" x 36"  
48" x 48"



**BUSINESS SPUR XXX**  
M1-3  
22.5" x 18"  
30" x 24"  
45" x 36"  
60" x 48"



**XX**  
M1-4  
18" x 18"  
24" x 24"  
36" x 36"  
48" x 48"



**XXX**  
M1-4  
22.5" x 18"  
30" x 24"  
45" x 36"  
60" x 48"



**MONTMORENCY COUNTY XX**  
M1-5  
18" x 18"  
24" x 24"  
30" x 30"  
36" x 36"



**BARAGA COUNTY XXX**  
M1-5d  
18" x 18"  
24" x 24"



**M1-6**  
18" x 18"  
24" x 24"  
36" x 36"



**M1-6**  
22.5" x 18"  
30" x 24"  
45" x 36"



**NORTH**  
M3-1  
12" x 6"  
18" x 9"  
24" x 12"  
30" x 15"  
36" x 18"



**EAST**  
M3-2  
12" x 6"  
18" x 9"  
24" x 12"  
30" x 15"  
36" x 18"



**SOUTH**  
M3-3  
12" x 6"  
18" x 9"  
24" x 12"  
30" x 15"  
36" x 18"



**WEST**  
M3-4  
12" x 6"  
18" x 9"  
24" x 12"  
30" x 15"  
36" x 18"



**ALTERNATE**  
M4-1  
12" x 6"  
18" x 9"  
24" x 12"  
30" x 15"  
36" x 18"



**ALT**  
M4-1a  
12" x 6"  
18" x 9"  
24" x 12"  
30" x 15"  
36" x 18"



**BY-PASS**  
M4-2  
12" x 6"  
18" x 9"  
24" x 12"  
30" x 15"  
36" x 18"



**BUSINESS**  
M4-3  
12" x 6"  
18" x 9"  
24" x 12"  
30" x 15"  
36" x 18"



**TRUCK**  
M4-4  
18" x 9"  
24" x 12"  
30" x 15"  
36" x 18"



**TO**  
M4-5  
12" x 6"  
18" x 9"  
24" x 12"  
30" x 15"  
36" x 18"



**END**  
M4-6  
12" x 6"  
18" x 9"  
24" x 12"  
30" x 15"  
36" x 18"



**TEMPORARY**  
M4-7  
12" x 6"  
18" x 9"  
24" x 12"  
30" x 15"  
36" x 18"



**TEMP**  
M4-7a  
12" x 6"  
18" x 9"  
24" x 12"  
30" x 15"  
36" x 18"



**DETOUR**  
M4-8  
12" x 6"  
18" x 9"  
24" x 12"  
30" x 15"  
36" x 18"



**END DETOUR**  
M4-8a  
24" x 18"



**END**  
M4-8b  
24" x 12"



**DETOUR**  
M4-9L  
30" x 24"  
48" x 36"  
60" x 48"



**DETOUR**  
M4-9R  
30" x 24"  
48" x 36"  
60" x 48"



**DETOUR**  
M4-9j  
30" x 24"  
48" x 36"  
60" x 48"



**DETOUR**  
M4-9KL  
30" x 30"  
48" x 42"  
60" x 54"



**DETOUR**  
M4-9kR  
30" x 30"  
48" x 42"  
60" x 54"



**DETOUR**  
M4-9mL  
30" x 30"  
48" x 42"  
60" x 54"



**DETOUR**  
M4-9mR  
30" x 30"  
48" x 42"  
60" x 54"



**M4-9dL**  
12" x 18"



**M4-9dR**  
12" x 18"



**M4-9e**  
12" x 18"



**END**  
M4-9f  
12" x 18"



**M4-9gL**  
12" x 18"



**M4-9gR**  
12" x 18"



**M4-9h**  
12" x 24"



**END**  
M4-9i  
12" x 18"



**M4-10L**  
48" x 18"



**M4-10R**  
48" x 18"



**FOLLOW**  
M4-11a  
12" x 6"  
18" x 9"  
24" x 12"  
30" x 15"  
36" x 18"



**M5-1L**  
12" x 9"  
21" x 15"  
30" x 21"



**M5-1R**  
12" x 9"  
21" x 15"  
30" x 21"



**M5-2L**  
12" x 9"  
21" x 15"  
30" x 21"



**M5-2R**  
12" x 9"  
21" x 15"  
30" x 21"



**M5-3**  
12" x 9"  
21" x 15"  
30" x 21"



**M6-1L**  
12" x 9"  
18" x 12"  
21" x 15"  
30" x 21"



**M6-1R**  
12" x 9"  
18" x 12"  
21" x 15"  
30" x 21"



**M6-2L**  
12" x 9"  
18" x 12"  
21" x 15"  
30" x 21"



**M6-2R**  
12" x 9"  
18" x 12"  
21" x 15"  
30" x 21"



**M6-3**  
12" x 9"  
18" x 12"  
21" x 15"  
30" x 21"



**M6-4**  
12" x 9"  
18" x 12"  
21" x 15"  
30" x 21"



**M6-5**  
12" x 9"  
18" x 12"  
21" x 15"  
30" x 21"



**M6-6L**  
12" x 9"  
18" x 12"  
21" x 15"  
30" x 21"



**M6-6R**  
12" x 9"  
18" x 12"  
21" x 15"  
30" x 21"



**M6-7L**  
12" x 9"  
18" x 12"  
21" x 15"  
30" x 21"



**M6-7R**  
12" x 9"  
18" x 12"  
21" x 15"  
30" x 21"

SEE MDOT SHS 13-WORK ZONE FOR SIGN DETAILS



NOT TO SCALE

MAINTAINING TRAFFIC TYPICAL

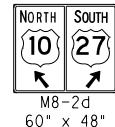
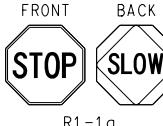
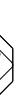
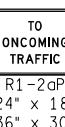
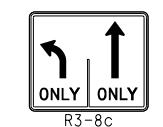
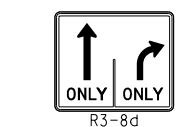
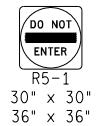
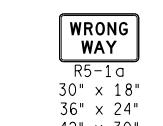
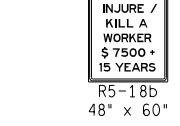
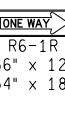
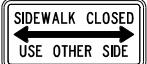
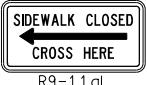
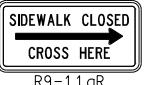
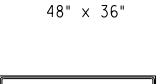
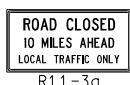
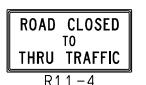
NO:

103-GEN-SIGN

TRAFFIC TYPICALS  
SIGN SHEET

DATE: JUNE 2021  
SHEET: 1 OF 5

## SIGN NUMBER KEY

 M8-1gL 36" x 66"	 M8-1gR 36" x 66"	 M8-2d 60" x 48"	 OM-3L 12" x 36" 24" x 48" 36" x 72"	 OM-3R 12" x 36" 24" x 48" 36" x 72"	 R1-1 18" x 18" 24" x 24" 30" x 30" 36" x 36" 48" x 48"	 R1-1a 18" x 18" 24" x 24"	 R1-2 18" x 24" 30" x 36" 36" x 48" 60" x 60"
 R1-2aP 24" x 18" 36" x 30" 48" x 36"	 R2-1 18" x 24" 24" x 30" 30" x 36" 36" x 48" 48" x 60"	 R2-1a 48" x 60"	 R3-1 24" x 24" 30" x 30" 36" x 36" 48" x 48"	 R3-2 24" x 24" 30" x 30" 36" x 36" 48" x 48"	 R3-3 24" x 24" 36" x 36" 48" x 48"	 R3-4 24" x 24" 30" x 30" 36" x 36" 48" x 48"	 R3-5L 30" x 36" 36" x 48"
 R3-5R 30" x 36" 36" x 48"	 R3-5a 30" x 36" 36" x 48"	 R3-6L 30" x 36" 42" x 48"	 R3-6R 30" x 36" 42" x 48"	 R3-7L 30" x 30" 36" x 36"	 R3-7R 30" x 30" 36" x 36"	 R3-8c 36" x 30"	 R3-8d 36" x 30"
 R4-1 12" x 18" 18" x 24" 24" x 30" 36" x 48" 48" x 60"	 R4-2 12" x 18" 18" x 24" 24" x 30" 36" x 48" 48" x 60"	 R4-7 12" x 18" 18" x 24" 24" x 30" 36" x 48" 48" x 60"	 R4-8 18" x 24" 24" x 30" 36" x 48" 48" x 60"	 R4-9 18" x 24" 24" x 30" 36" x 48" 48" x 60"	 R5-1 30" x 30" 36" x 36" 48" x 48"	 R5-1a 30" x 18" 36" x 24" 42" x 30"	 R5-1b 48" x 60"
 R5-18c 48" x 48"	 R5-18d 78" x 12"		 R5-18e 72" x 12"	 R5-18f 48" x 60"	 R5-18g 30" x 42"	 R5-18h 48" x 60"	 R6-1L 36" x 12" 54" x 18"
 R6-1R 36" x 12" 54" x 18"	 R6-2L 12" x 16" 18" x 24" 24" x 30" 36" x 48" 48" x 60"	 R6-2R 12" x 16" 18" x 24" 24" x 30" 36" x 48" 48" x 60"	 R8-3 12" x 12" 18" x 18" 24" x 24" 36" x 36" 48" x 48"	 R9-8 36" x 18"	 R9-9 24" x 12" 30" x 18"	 R9-10 24" x 12" 48" x 24"	 R9-11L 24" x 12" 48" x 36"
 R9-11R 24" x 12" 48" x 36"	 R9-11dL 24" x 12" 48" x 24"	 R9-11dR 24" x 12" 48" x 24"	 R10-6b 36" x 54"	 R11-2 48" x 30"	 R11-2a 48" x 30"	 R11-2b 48" x 30"	 R11-2c 60" x 30"
 R11-3a 60" x 30"	 R11-3b 60" x 30"	 R11-4 60" x 30"					
SEE MDOT SHS 13-WORK ZONE FOR SIGN DETAILS							
 Michigan Department of Transportation	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL		TRAFFIC TYPICALS SIGN SHEET			DATE: JUNE 2021
		NO:	103-GEN-SIGN				SHEET:
FILE: 103-GEN-SIGN.dgn							

## SIGN NUMBER KEY



W1-1L  
18" x 18"  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W1-1R  
18" x 18"  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W1-2L  
18" x 18"  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W1-2R  
18" x 18"  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W1-2bL  
36" x 36"  
48" x 48"



W1-2bR  
36" x 36"  
48" x 48"



W1-3L  
18" x 18"  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W1-3R  
18" x 18"  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W1-4L  
18" x 18"  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W1-4R  
18" x 18"  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W1-4bL  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W1-4bR  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W1-4cL  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W1-4cR  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W24-1L  
30" x 30"  
36" x 36"  
48" x 48"



W24-1R  
30" x 30"  
36" x 36"  
48" x 48"



W24-1dL  
30" x 30"  
36" x 36"  
48" x 48"



W24-1dR  
30" x 30"  
36" x 36"  
48" x 48"



W24-1bL  
30" x 30"  
36" x 36"  
48" x 48"



W24-1bR  
30" x 30"  
36" x 36"  
48" x 48"



W1-6L  
24" x 12"  
36" x 18"  
48" x 24"  
60" x 30"  
96" x 48"



W1-6R  
24" x 12"  
36" x 18"  
48" x 24"  
60" x 30"  
96" x 48"



W1-8L  
12" x 18"  
18" x 24"  
24" x 30"  
30" x 36"  
36" x 48"



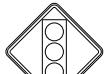
W1-8R  
12" x 18"  
18" x 24"  
24" x 30"  
30" x 36"  
36" x 48"



W3-1  
18" x 18"  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W3-2  
18" x 18"  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W3-3  
18" x 18"  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W3-4  
30" x 30"  
36" x 36"  
48" x 48"  
60" x 60"



W3-4b  
30" x 30"  
36" x 36"  
48" x 48"



W3-5  
36" x 36"  
48" x 48"



W3-5a  
30" x 30"  
36" x 36"  
48" x 48"  
60" x 60"



W3-5b  
30" x 30"  
36" x 36"  
48" x 48"



W4-1L  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W4-1R  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W4-2L  
30" x 30"  
36" x 36"  
48" x 48"



W4-2R  
30" x 30"  
36" x 36"  
48" x 48"



W4-3L  
30" x 30"  
36" x 36"  
48" x 48"



W4-3R  
30" x 30"  
36" x 36"  
48" x 48"



W4-5L  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W4-5R  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W4-5P  
18" x 24"  
24" x 30"



W4-6L  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W4-6R  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W4-7L  
30" x 30"  
36" x 36"  
48" x 48"  
60" x 60"



W4-7R  
30" x 30"  
36" x 36"  
48" x 48"  
60" x 60"



W5-1  
30" x 30"  
36" x 36"  
48" x 48"



W5-2  
18" x 18"  
30" x 30"  
36" x 36"  
48" x 48"



W5-3  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W5-4  
30" x 30"  
36" x 36"  
48" x 48"



W6-1  
30" x 30"  
36" x 36"  
48" x 48"



W6-2  
30" x 30"  
36" x 36"  
48" x 48"



W6-3  
30" x 30"  
36" x 36"  
48" x 48"



W6-4  
12" x 18"



W7-1  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W7-1a  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W8-1  
18" x 18"  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"

SEE MDOT SHS 13-WORK ZONE FOR SIGN DETAILS



NOT TO SCALE

MAINTAINING TRAFFIC TYPICAL

NO:

103-GEN-SIGN

TRAFFIC TYPICALS  
SIGN SHEET

DATE: JUNE 2021  
SHEET: 1 OF 5

## SIGN NUMBER KEY

						
W8-2 18" x 18" 24" x 24" 30" x 30" 36" x 36" 48" x 48"	W8-3 18" x 18" 30" x 30" 36" x 36" 48" x 48"	W8-4 18" x 18" 24" x 24" 30" x 30" 36" x 36" 48" x 48"	W8-5 24" x 24" 30" x 30" 36" x 36" 48" x 48"	W8-5P 24" x 18" 30" x 24" 36" x 30"	W8-7 24" x 24" 30" x 30" 36" x 36" 48" x 48"	W8-8 24" x 24" 30" x 30" 36" x 36" 48" x 48"
						
W8-11 24" x 24" 30" x 30" 36" x 36" 48" x 48"	W8-12 30" x 30" 36" x 36" 48" x 48"	W8-14 24" x 24" 30" x 30" 36" x 36" 48" x 48"	W8-15 24" x 24" 30" x 30" 36" x 36" 48" x 48"	W8-15P 24" x 18" 30" x 24" 36" x 30"	W8-17L 24" x 24" 30" x 30" 36" x 36" 48" x 48"	W8-17R 24" x 24" 30" x 30" 36" x 36" 48" x 48"
						
W8-18 24" x 24" 36" x 36" 48" x 48"	W8-23 24" x 24" 36" x 36" 48" x 48"	W8-24 30" x 30" 36" x 36" 48" x 48"	W8-25 24" x 24" 30" x 30" 36" x 36" 48" x 48"	W8-26 36" x 36" 48" x 48"	W9-1L 24" x 24" 30" x 30" 36" x 36" 48" x 48"	W9-1R 24" x 24" 30" x 30" 36" x 36" 48" x 48"
						
W9-2R 30" x 30" 36" x 36" 48" x 48"	W9-3C 30" x 30" 36" x 36" 48" x 48" 60" x 60"	W9-3L 30" x 30" 36" x 36" 48" x 48" 60" x 60"	W9-3R 30" x 30" 36" x 36" 48" x 48" 60" x 60"	W9-3a 30" x 30" 36" x 36" 48" x 48" 60" x 60"	W9-3b 30" x 30" 36" x 36" 48" x 48" 60" x 60"	W11-10 24" x 24" 30" x 30" 36" x 36" 48" x 48"
						
W11-24 36" x 36" 48" x 48"	W12-1 24" x 24" 30" x 30" 36" x 36" 48" x 48"	W12-2 18" x 18" 30" x 30" 36" x 36" 48" x 48"	W13-1P 18" x 18" 24" x 24" 30" x 30"	W13-2 24" x 30" 36" x 48" 48" x 60"	W13-3 24" x 30" 36" x 48" 48" x 60"	W11-10a 24" x 24" 30" x 30" 36" x 36" 48" x 48"
						
W13-6a 24" x 42" 36" x 60" 48" x 84"	W13-7 24" x 42" 36" x 60" 48" x 84"	W13-7a 24" x 42" 36" x 60" 48" x 84"	W14-3 36" x 24" 40" x 30" 48" x 36" 64" x 48"	W16-2P 18" x 12" 24" x 18" 30" x 24"	W16-4dP 18" x 12" 24" x 18" 30" x 24" 36" x 30"	W16-12P 24" x 18"
						
W20-1 24" x 24" 30" x 30" 36" x 36" 48" x 48" 60" x 60"	W20-1a 24" x 24" 30" x 30" 36" x 36" 48" x 48" 60" x 60"	W20-1b 24" x 24" 30" x 30" 36" x 36" 48" x 48" 60" x 60"	W20-1c 24" x 24" 30" x 30" 36" x 36" 48" x 48" 60" x 60"	W20-1d 24" x 24" 30" x 30" 36" x 36" 48" x 48" 60" x 60"	W20-2 30" x 30" 36" x 36" 48" x 48"	W20-3 30" x 30" 36" x 36" 48" x 48"
	NOT TO SCALE		MAINTAINING TRAFFIC TYPICAL		TRAFFIC TYPICALS SIGN SHEET	
FILE: 103-GEN-SIGN.dgn	NO:	103-GEN-SIGN	DATE: JUNE 2021			
			SHEET:			
			4 OF 5			

SEE MDOT SHS 13-WORK ZONE FOR SIGN DETAILS

## SIGN NUMBER KEY



W20-3b  
30" x 30"  
36" x 36"  
48" x 48"



W20-4  
30" x 30"  
36" x 36"  
48" x 48"



W20-4c  
36" x 36"  
48" x 48"



W20-5c  
30" x 30"  
36" x 36"  
48" x 48"



W20-5L  
30" x 30"  
36" x 36"  
48" x 48"



W20-5L1  
30" x 30"  
36" x 36"  
48" x 48"



W20-5L2  
30" x 30"  
36" x 36"  
48" x 48"



W20-5R  
30" x 30"  
36" x 36"  
48" x 48"



W20-5R1  
30" x 30"  
36" x 36"  
48" x 48"



W20-5R2  
30" x 30"  
36" x 36"  
48" x 48"



W20-5aL2  
30" x 30"  
36" x 36"  
48" x 48"



W20-5aL3  
30" x 30"  
36" x 36"  
48" x 48"



W20-5aR2  
30" x 30"  
36" x 36"  
48" x 48"



W20-5aR3  
30" x 30"  
36" x 36"  
48" x 48"



W20-7a  
30" x 30"  
36" x 36"  
48" x 48"



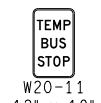
W20-8  
24" x 18"



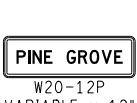
W20-9  
54" x 48"



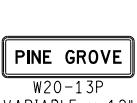
W20-10  
48" x 24"  
66" x 30"



W20-11  
12" x 18"



W20-12P  
VARIABLE x 12"



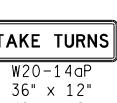
W20-13P  
VARIABLE x 12"



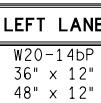
W20-14L  
36" x 36"  
48" x 48"



W20-14R  
36" x 36"  
48" x 48"



W20-14aP  
36" x 12"  
48" x 12"



W20-14bP  
36" x 12"  
48" x 12"



W20-15  
36" x 36"  
48" x 48"



W20-15a  
36" x 36"  
48" x 48"



W20-15c  
48" x 54"



W20-15d  
48" x 54"



W20-16  
36" x 36"  
48" x 48"



W20-17  
36" x 36"  
48" x 48"



W21-1  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W21-2  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W21-2  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W21-3  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W21-4  
36" x 18"



W21-5  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W21-5aL  
30" x 30"  
36" x 36"  
48" x 48"  
60" x 60"



W21-5aR  
30" x 30"  
36" x 36"  
48" x 48"  
60" x 60"



W21-5bL  
30" x 30"  
36" x 36"  
48" x 48"  
60" x 60"



W21-5bR  
30" x 30"  
36" x 36"  
48" x 48"  
60" x 60"



W21-6  
24" x 24"  
30" x 30"  
36" x 36"  
48" x 48"



W21-7  
30" x 30"  
36" x 36"  
48" x 48"



W21-8  
30" x 30"  
36" x 36"  
48" x 48"



W22-1  
30" x 30"  
36" x 36"  
48" x 48"



W22-2  
42" x 36"



W22-3  
36" x 30"  
42" x 36"



W23-1  
48" x 24"



W23-2  
36" x 36"  
48" x 48"

SEE MDOT SHS 13-WORK ZONE FOR SIGN DETAILS



NOT TO SCALE

MAINTAINING TRAFFIC TYPICAL

NO:

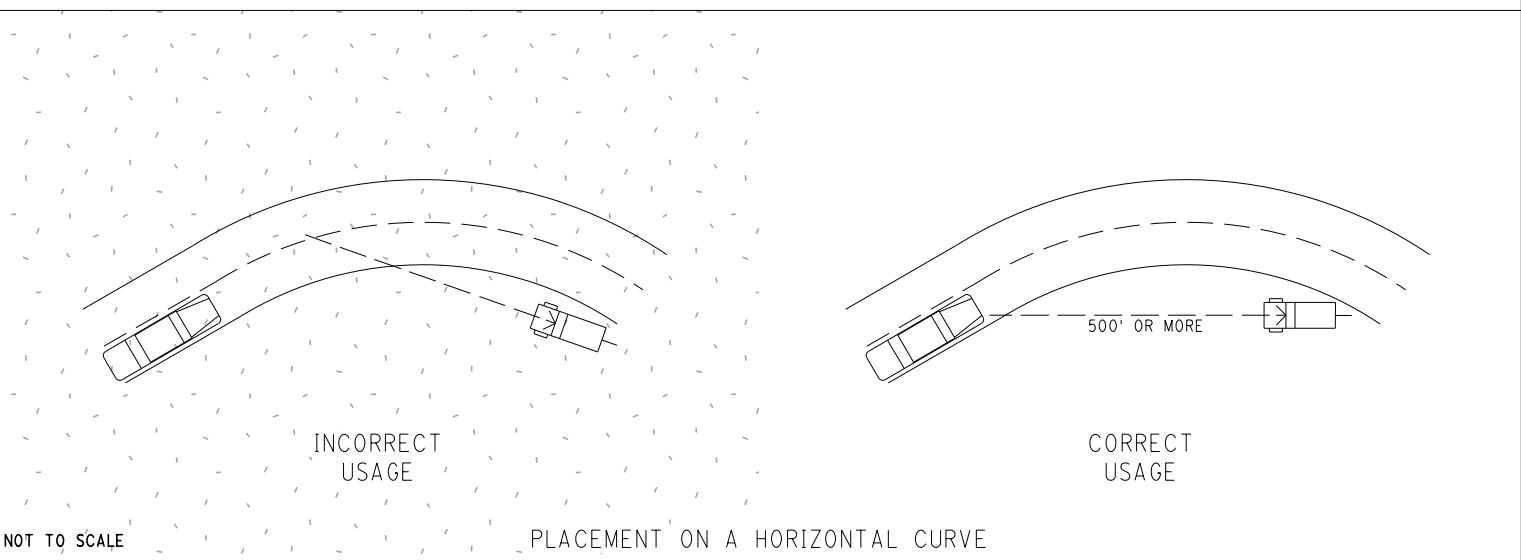
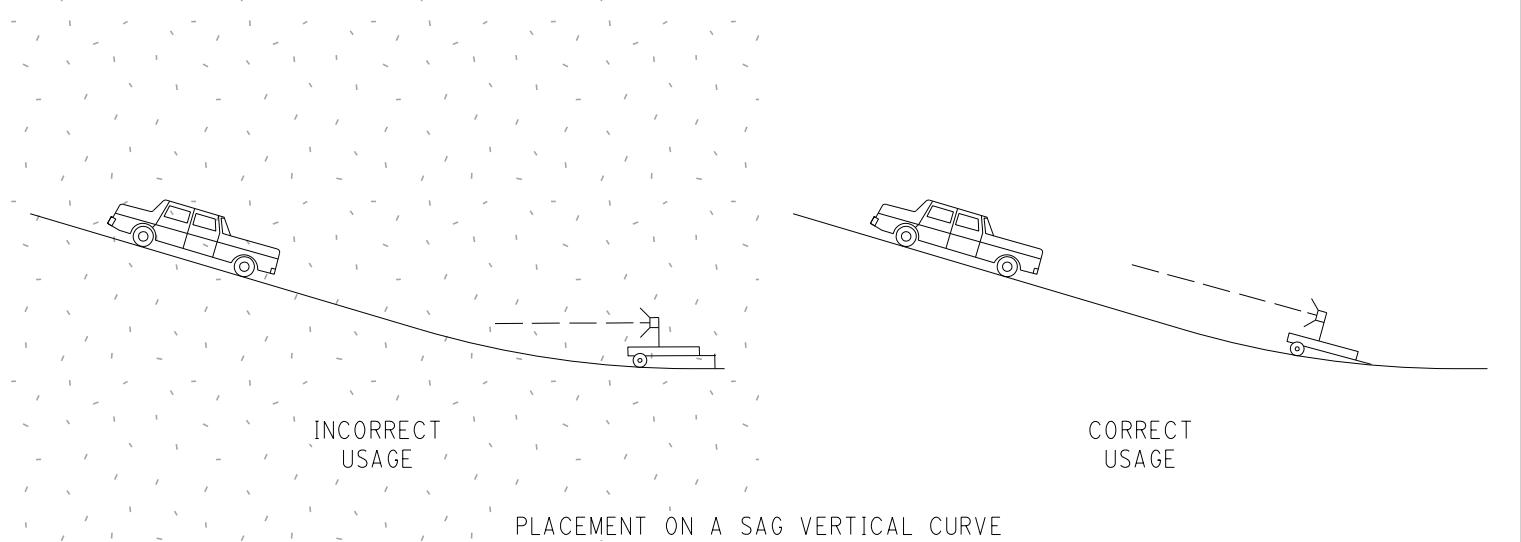
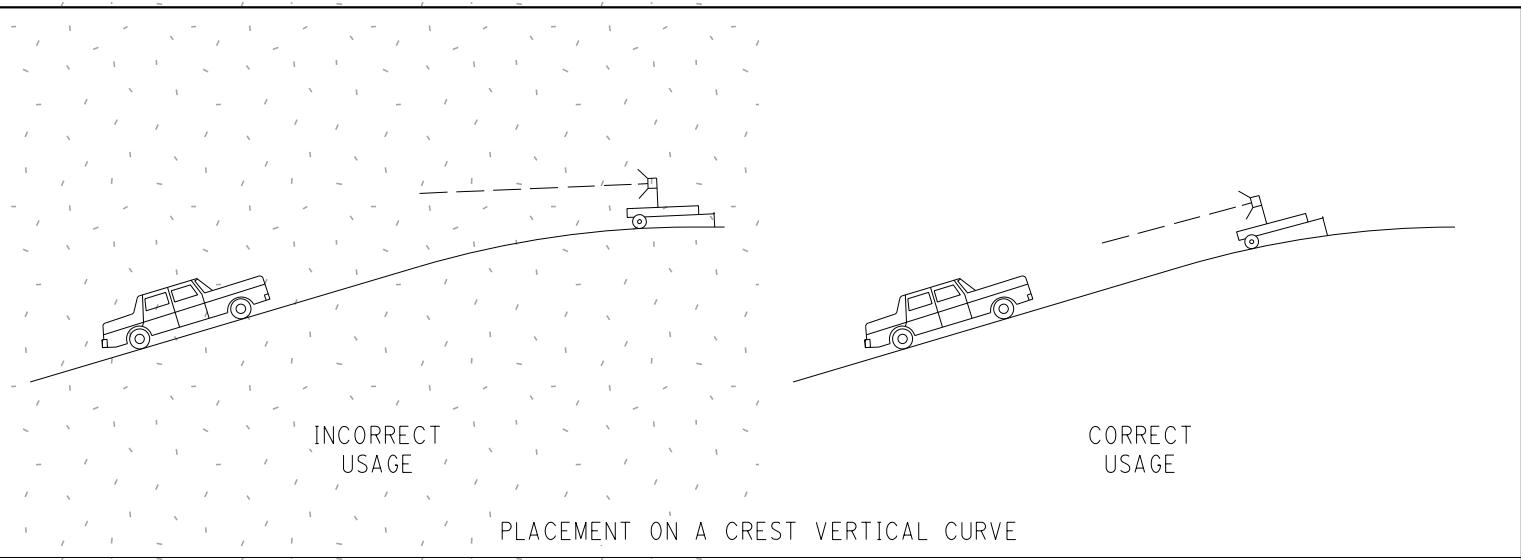
103-GEN-SIGN

TRAFFIC TYPICALS  
SIGN SHEET

DATE: JUNE 2021

SHEET:

5 OF 5



NOTE:

ENSURE THE ARROW REMAINS CLEARLY LEGIBLE AT DISTANCES FROM 2,500 FEET TO 200 FEET, FROM ALL TRAFFIC LANES AND ROADWAY ENTRANCES. DO NOT PLACE THE LIGHTED ARROW ON A HORIZONTAL OR VERTICAL CURVE THAT MIGHT INTERFERE WITH THIS LEGIBILITY REQUIREMENT.



NOT TO SCALE

MAINTAINING TRAFFIC TYPICAL

NO:

104-GEN-AB

USE OF ARROW BOARD ON HILL OR CURVE  
AND WORK ZONE LAYOUT

DATE:  
MAY 2021  
SHEET:

1 OF 1

## KEY

- TRAFFIC REGULATOR
- CHANNELIZING DEVICES
- LIGHTED ARROW PANEL (CAUTION MODE)
- TRAFFIC FLOW
- REFLECTS EXISTING SPEED LIMIT
- PLACE SIGN AS INDICATED IN NOTE S5
- PLACE SIGN AS INDICATED IN NOTE S2

## STANDARD NOTES

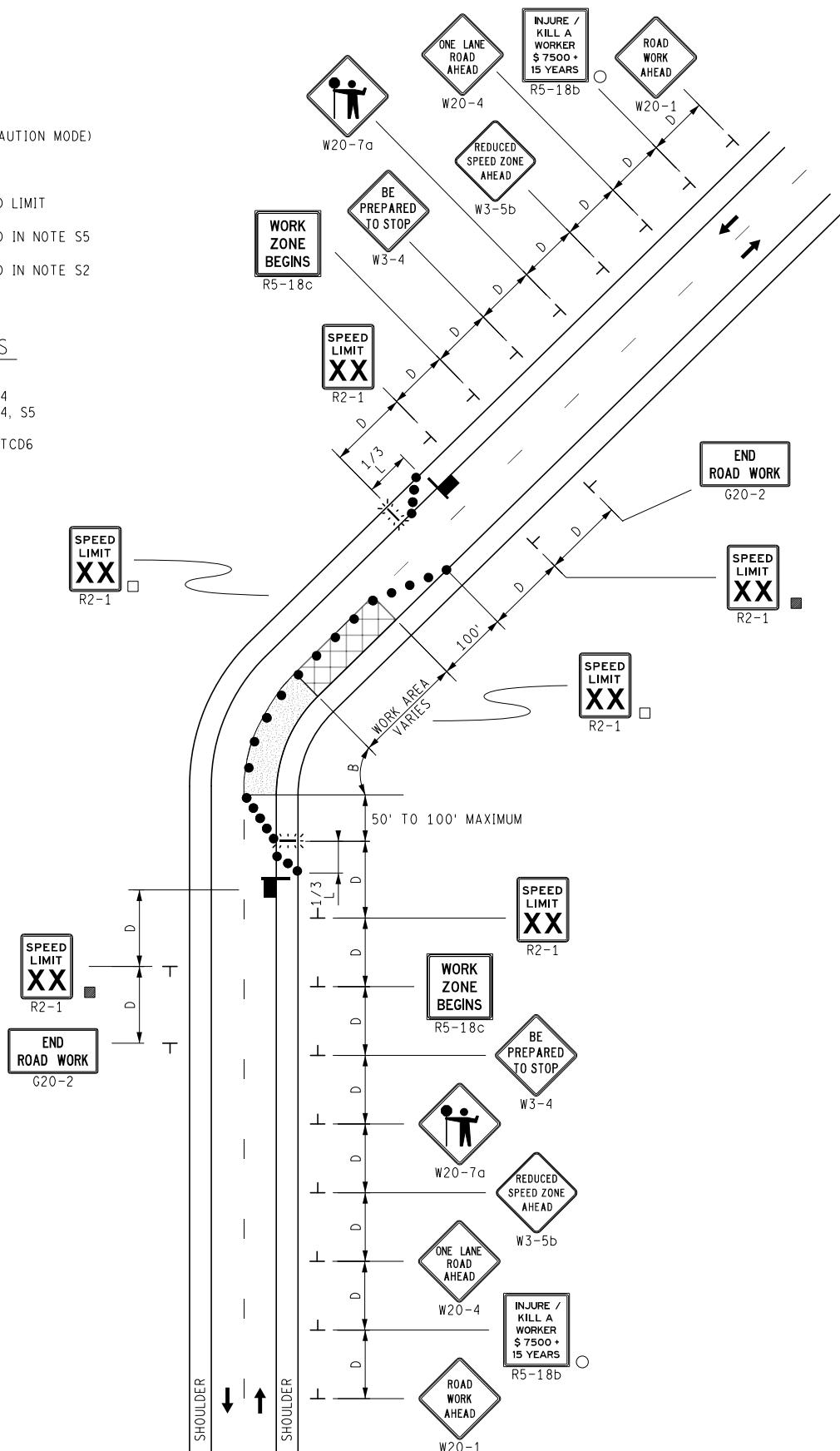
(SEE GEN-NOTES)

GENERAL: G1, G2, G3, G4

SIGNING: S1, S2, S3, S4, S5

TRAF REG: TR1, TR2

DEVICES: TCD1, TCD2, TCD6



NOT TO SCALE

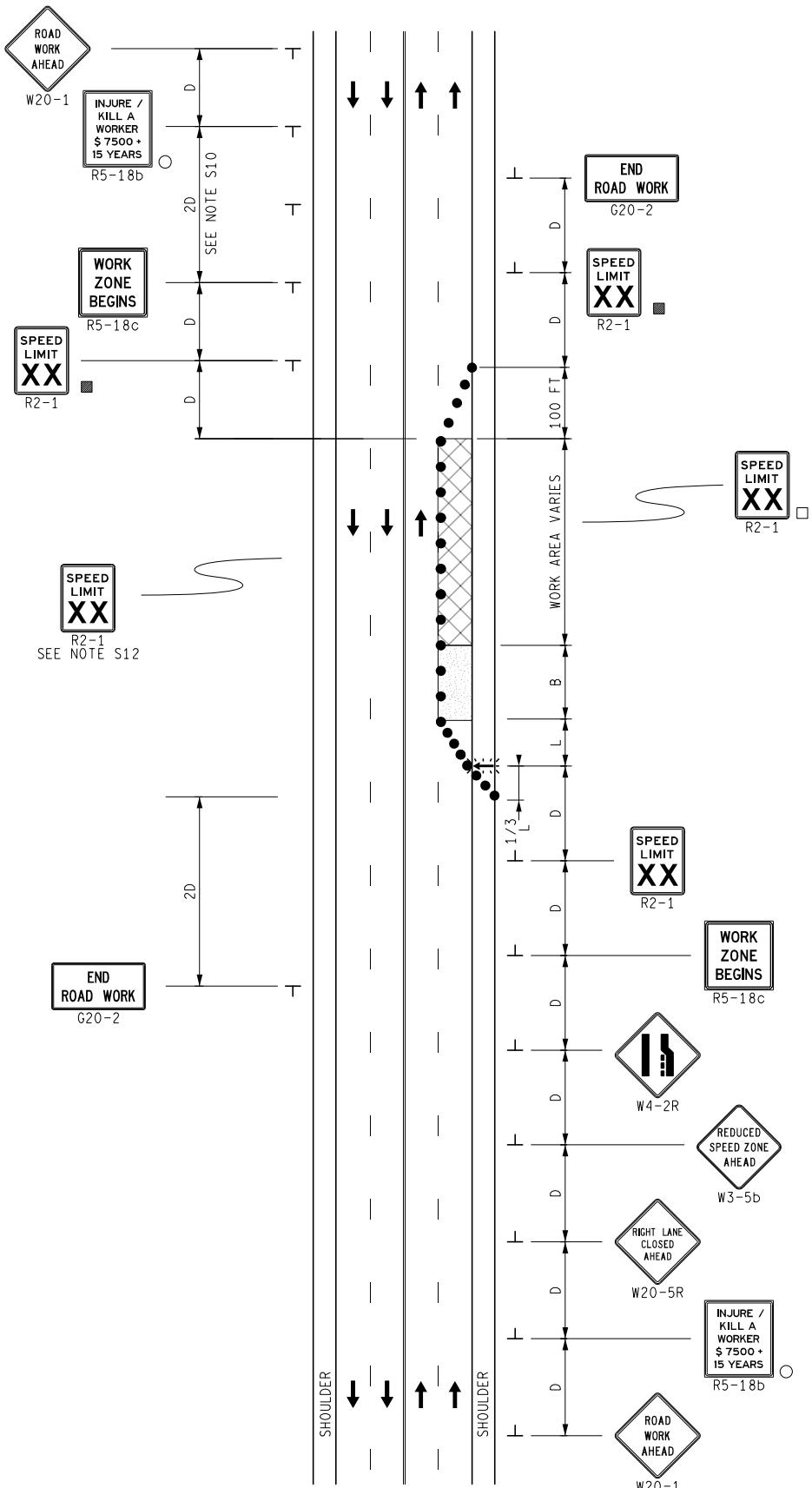
MAINTAINING TRAFFIC TYPICAL

NO:  
110-TR-NFW-2L

LANE CLOSURE  
UTILIZING TRAFFIC REGULATORS  
ON A 2-LANE UNDIVIDED ROADWAY

DATE:  
MAY 2021  
SHEET:

1 OF 1



## KEY

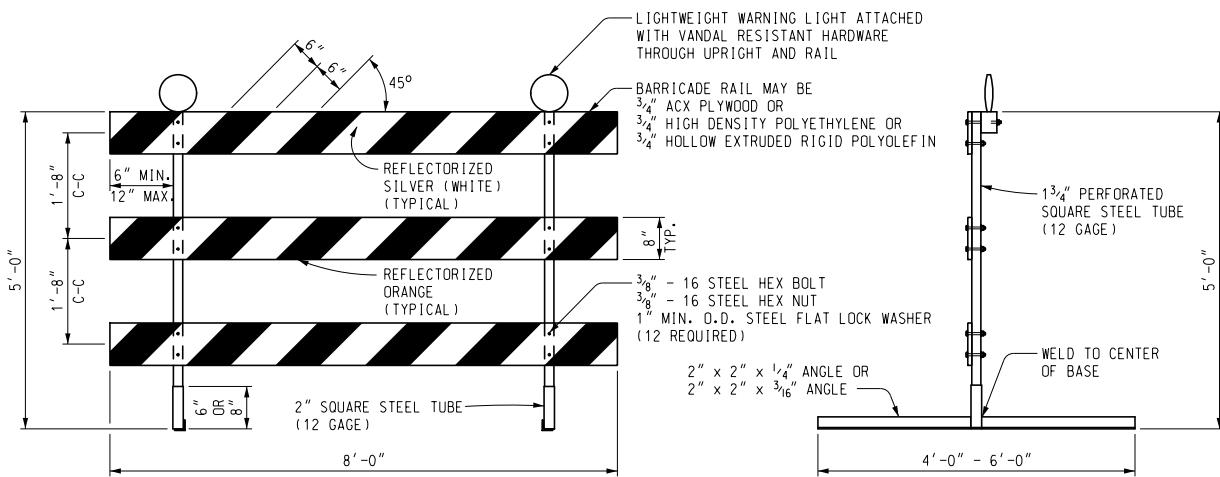
- CHANNELIZING DEVICES
- ◆ LIGHTED ARROW PANEL
- ← TRAFFIC FLOW
- REFLECTS EXISTING SPEED LIMIT
- PLACE SIGN AS INDICATED IN NOTE S5
- PLACE SIGN AS INDICATED IN NOTE S2

## STANDARD NOTES

(SEE 102-GEN-NOTES)

GENERAL: G1, G2, G3, G4  
SIGNING: S1, S2, S3, S5, S10, S12  
DEVICES: TCD1, TCD2, TCD6

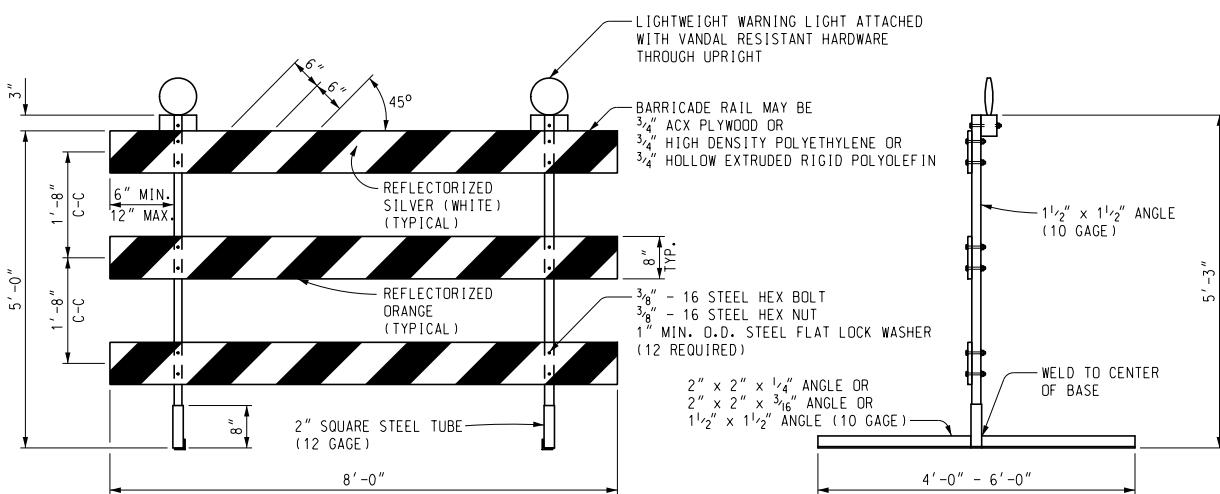
 <b>MDOT</b> Michigan Department of Transportation	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL  NO: 123-NFW-1LC-(R)	1 RIGHT LANE CLOSURE ON A 4-LANE UNDIVIDED ROADWAY	DATE:
				MAY 2021



FRONT ELEVATION

SIDE VIEW

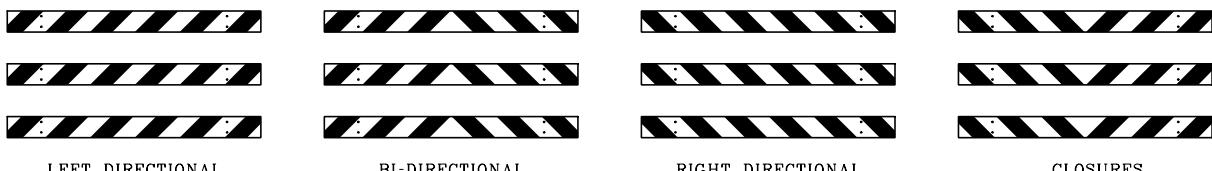
## PERFORATED SQUARE STEEL TUBE OPTION



FRONT ELEVATION

SIDE VIEW

## ANGLE IRON OPTION



LEFT DIRECTIONAL

BI-DIRECTIONAL

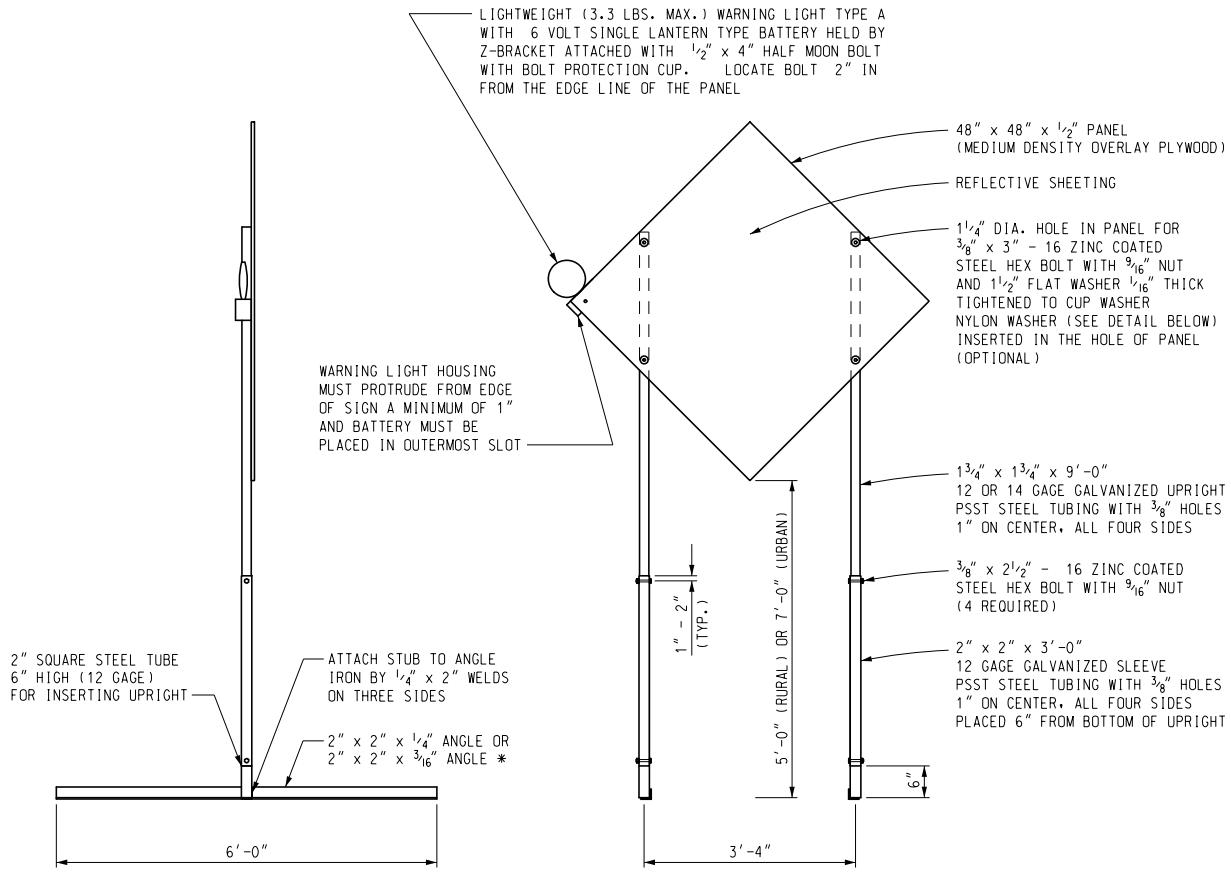
RIGHT DIRECTIONAL

CLOSURES

BARRICADE RAIL SHEETING OPTIONS  
TYPE III BARRICADES

Other Type III Barricades meeting current NCHRP crash worthy criteria can be found on the FHWA Safety website at  
[http://safety.fhwa.dot.gov/roadway\\_dept/road.hardware/wzd.htm](http://safety.fhwa.dot.gov/roadway_dept/road.hardware/wzd.htm)

<b>MDOT</b> Michigan Department of Transportation	DEPARTMENT DIRECTOR Paul C. Ajegba	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF FIELD SERVICES SPECIAL DETAIL FOR		
		Temporary Traffic Control Devices		
PREPARED BY OPERATIONS FIELD SERVICES	APPROVED BY: DIRECTOR, BUREAU OF FIELD SERVICES			
DRAWN BY: <u>ECH</u>	APPROVED BY: (SPECIAL DETAIL) DIRECTOR, BUREAU OF HIGHWAY DEVELOPMENT	Page 84 of 149	6/16/22	WZD-125-E
CHECKED BY: <u>MWB</u>				SHEET 1 OF 3



SIDE VIEW

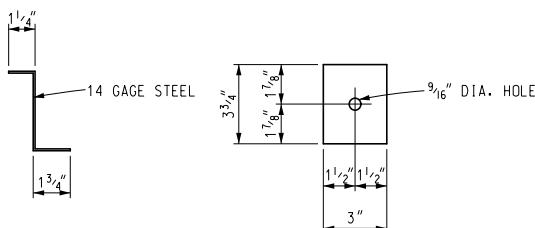
FRONT ELEVATION

## TEMPORARY SIGN SUPPORT

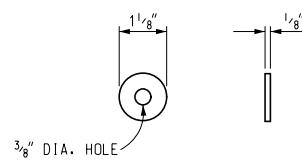
(WARNING LIGHT PLACED ON SIDE CLOSEST TO TRAFFIC)

\* SIGN STAND IS BALLASTED WITH FOUR OR MORE 35 LB SANDBAGS. A MINIMUM OF ONE ON EACH END.

UPRIGHTS SHALL NOT EXTEND ABOVE THE SIGN PANEL.



Z-BRACKET DETAIL



OPTIONAL NYLON WASHER

Other temporary sign supports meeting current NCHRP crash worthy criteria can be found on the FHWA Safety website at

[http://safety.fhwa.dot.gov/roadway\\_dept/road\\_hardware/wzd.htm](http://safety.fhwa.dot.gov/roadway_dept/road_hardware/wzd.htm)

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION

BUREAU OF FIELD SERVICES SPECIAL DETAIL

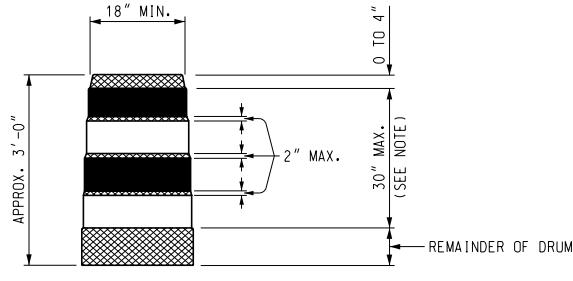
Page 85 of 149 F.H.W.A. APPROVAL

SPECIAL DETAIL  
6/16/22  
PLAN DATE

WZD-125-E

SHEET  
2 OF 3

NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.



■ REFLECTORIZED ORANGE

□ REFLECTORIZED WHITE

▨ NON REFLECTORIZING ORANGE

NOTE:  
DRUMS SHALL HAVE AT LEAST 4 HORIZONTAL REFLECTORIZING STRIPES (2 ORANGE AND 2 WHITE) OF 6" UNIFORM WIDTH, ALTERNATING IN COLOR WITH THE TOPMOST REFLECTORIZING STRIPE BEING ORANGE. NON REFLECTORIZING SPACES BETWEEN THE HORIZONTAL REFLECTORIZING ORANGE AND WHITE STRIPES SHALL BE ORANGE IN COLOR AND EQUAL IN WIDTH.

## PLASTIC DRUM

### NOTES:

2" PERFORATED SQUARE STEEL TUBES MAY BE USED TO FABRICATE THE HORIZONTAL BASE OF THE TYPE III BARRICADE.

WARNING LIGHTS SHALL BE PLACED ACCORDING TO THE CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND ALL OTHER PROVISIONS IN THE CONTRACT ON TYPE III BARRICADES.

SEE ROAD STANDARD PLANS R-113-SERIES FOR TEMPORARY CROSSOVERS FOR DIVIDED ROADWAY, AND R-126-SERIES FOR TYPICAL LOCATION AND SPACING OF PLASTIC DRUMS FOR PLACEMENT OF TEMPORARY CONCRETE BARRIER.

SIGNS, BARRICADES, AND PLASTIC DRUMS SHALL BE FACED WITH PRESSURE-SENSITIVE REFLECTIVE SHEETING ACCORDING TO THE CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

SANDBAGS SHALL BE USED WHEN SUPPLEMENTAL WEIGHTS ARE REQUIRED TO ACHIEVE STABILITY OF THE BARRICADE. THE SANDBAGS SHALL BE PLACED SO THEY WILL NOT COVER OR OBSTRUCT ANY REFLECTIVE PORTION OF THE TRAFFIC CONTROL DEVICE.

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION

BUREAU OF FIELD SERVICES SPECIAL DETAIL

Page 86 of 149 (SPECIAL DETAIL)

6/16/22  
PLAN DATE

WZD-125-E

SHEET  
3 OF 3

**Log of Project**  
**Grand Traverse County Road Commission**  
**2024 Special Pavement Marking Program**  
**Contract #: 24E402**

**Project Location:**

Various routes, Grand Traverse County, MI

**Description of Work:**

24E402 – Countywide Special Pavement Marking Program Durable and special pavement markings, on roadways listed below expect as specified herein.

Locations of Long Line Durable Marking Applications

Durable Long Line Locations						
Road	Begin	End	Wet Reflective Polyurea 4" Yellow (Ft)	Wet Reflective Polyurea 4" White (Ft)	Recessing Longit	Scarify Existing Long Lines
Hammond Rd	Lafranier Rd	Townline Rd	20200	5350		x
Garfield Rd	Hammond Rd	S Airport Rd	16250	4000		x
Lafranier Rd	Hammond Rd	S Airport Rd	16250	4000	20250	
Three Mile Rd	Parsons Rd	S Airport Rd	5188	5591		x
Total			57888	18941	20250	

## Locations of Special Marking Applications:

Road	Marking	Location	Township	Comments
Arnold Rd	RR/Stop Bar	N of M-72 each side of RR tracks	Acme	
Peninsula Dr	arrows stop bar	M-37 intersection	Peninsula	
Garfield Rd	Right Arrows	Garfield at Cherryland Mall Entrance	Garfield	
Rennie School Rd	Left Arrows	Stadium Dr	Blair	
E Blair Townhall Rd	RR/Stop Bar	West of Garfield each side of tracks	Paradise	
Bunker Hill Rd	RR/Stop Bar	Crossing E of US-31	Acme	
Lautner Rd	RR/Stop Bar	Crossing N of Bunker Hill Rd	Acme	
Bunker Hill Rd	Left Arrow/Stop Bar	US-31 intersection	Acme	
Fisher Rd	12" X Walk	West Woods Elementary	Long Lake	
Emerson Rd	School	East of Garfield	Garfield	
S. Airport Rd	12" X Walk	Logans Landing Signal	Garfield	
Silver Lake	12" X Walk	at Barnes Rd	Garfield	
Silver Lake	6" X Walk	at Franke	Garfield	
Hammond	roundabout markings	4 Mile	Eastbay	Thermoplastic shall be used for lane line within roundabout, existing polyurea to be scarified
Holiday Rd	12" X Walk	ped crossing near RR tracks	Eastbay	
S. Airport Rd	Right Arrows	Aldi Entrance	Garfield	
S. Airport Rd	Right Arrows	Target Entrance	Garfield	
S. Airport Rd	Right Arrows	WB right turn lane at GT Mall	Garfield	
Cass	Only	SB Left Turn Lanes at Signal	Garfield	
SAirport	WB Stop bar	at Veterans	Garfield	
Gray Rd	Left Arrows	NB approach at M-72	Garfield	
Goodrick Rd	Stop Bar	at Cedar Run	Long Lake	
Veterans Dr	Thru Rt, Left arrow	at S. Airport	Garfield	
Victoria Dr	Left Arrow	at S. Airport	Garfield	

## Project Quantities

The following are estimated project quantities.

Item	Qty	Units
Mobilization, 5% max	1	LSum
Pavt Mrkg, Polyurea, 6 inch, Crosswalk	696	Ft
Pavt Mrkg, Polyurea, 24 inch, Stop Bar	482	Ft
Pavt Mrkg, Wet Reflective Polyurea, 4 inch, White	28,601	Ft
Pavt Mrkg, Wet Reflective Polyurea, 4 inch, Yellow	57,888	Ft
Rem Spec Mrkg	1,182	Sft
Pavt Mrkg, Polyurea, Lt Turn Arrow Sym	9	Ea
Pavt Mrkg, Polyurea, Rt Turn Arrow Sym	9	Ea
Pavt Mrkg, Polyurea, Thru and Rt Turn Arrow Sym	2	Ea
Pavt Mrkg, Polyurea, Only	2	Ea
Pavt Mrkg, Polyurea, School	2	Ea
Pavt Mrkg, Polyurea, 12 inch, Crosswalk	1,448	Ft
Recessing Pavt Mrkg, Longit	29,910	Ft
Recessing Pavt Mrkg, Transv	2,508	Sft
Scarification, for Polyurea Special Mrkg	1,800	Sft
Pavt Mrkg, Polyurea, Railroad Sym	8	Ea
Pavt Mrkg, Thermpl, 6 inch, White	60	Ft
Temporary Traffic Control	1	Lsum

## **General Notes**

### **Use of “ONLY” Markings**

“ONLY” markings shall only be used at locations where a lane drop occurs as depicted in the attached PAVE-940-D. “ONLY” markings not necessary per PAVE-940-D shall be removed.

### **Crosswalk Markings**

12” Crosswalk markings shall be used for mid-block and school zone crossings, all other crosswalks shall be 6” markings. 12” Crosswalk markings shall not be recessed.

### **Recessing**

All special markings and guide lines shall be recessed. 12” Crosswalk markings shall not be recessed.

### **Long Lines**

Long lines shall be replaced in kind

Existing durable markings shall be scarified prior to paint application incidental to the wet reflective paint items.

### **Reporting**

Contractor shall submit a weekly report indicating roadways painted, beginning termini, ending termini, type/quantities of items applied.

### **Notes Applying To Standard Plans:**

Where the following items are called for on the plans, they are to be constructed according to the standard plan given below:

<b>Title</b>	<b>Plan No.</b>
PAVEMENT ARROW & MESSAGE DETAILS	PAVE-900-G
PAVEMENT MARKING RECESSING DETAILS	PAVE-901-A
LONGITUDINAL LINE TYPES & PLACEMENT	PAVE-905-E
GUIDE LINE PAVEMENT MARKINGS	PAVE-907-A
PAVEMENT MARKINGS FOR NON-SIGNALIZED INTERSECTIONS	PAVE-930-D
LEFT TURN LANE MARKINGS	PAVE-935-E
RIGHT TURN LANE AND ISLAND PAVEMENT MARKINGS	PAVE-940-D
INTERSECTION, STOP BAR & CROSSWALK MARKINGS	PAVE-945-D
ROUNDABOUT MARKINGS	PAVE-951-C
SCHOOL MARKINGS	PAVE-960-B
RAILROAD GRADE CROSSING PAVEMENT MARKINGS	PAVE-965-D
LANE REDUCTION PAVEMENT MARKINGS	PAVE-971-B
CROSS-OVER PAVEMENT MARKINGS	PAVE-985-E

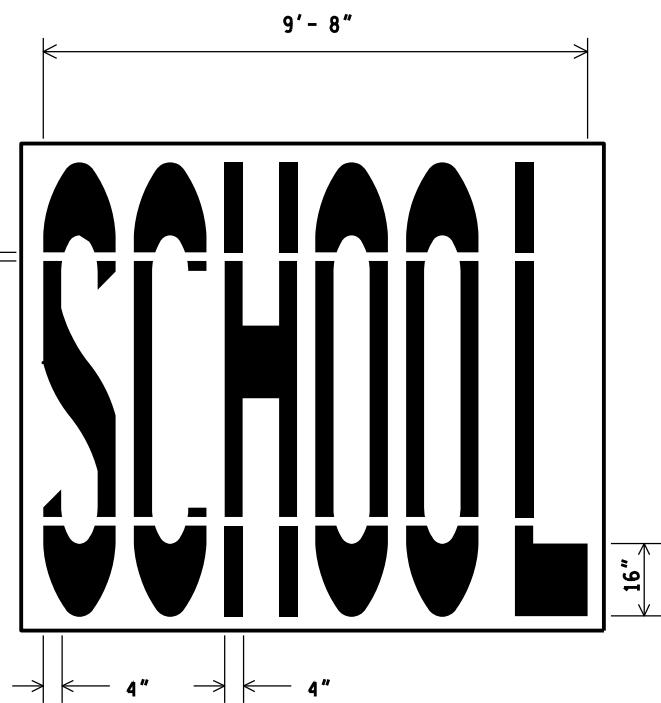
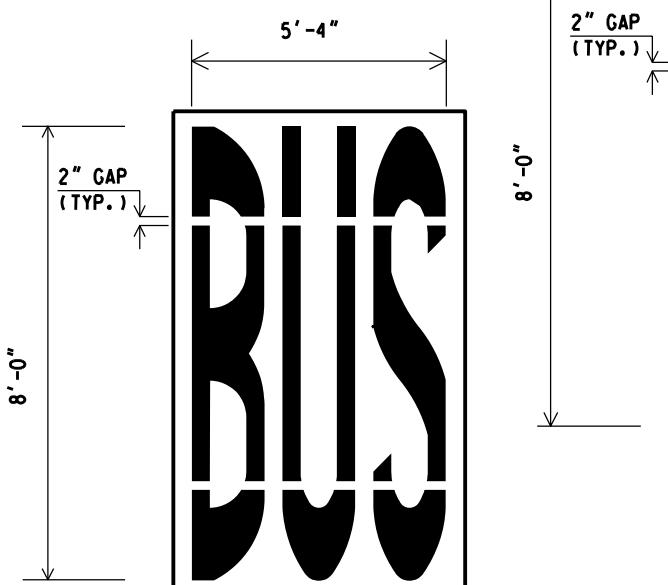
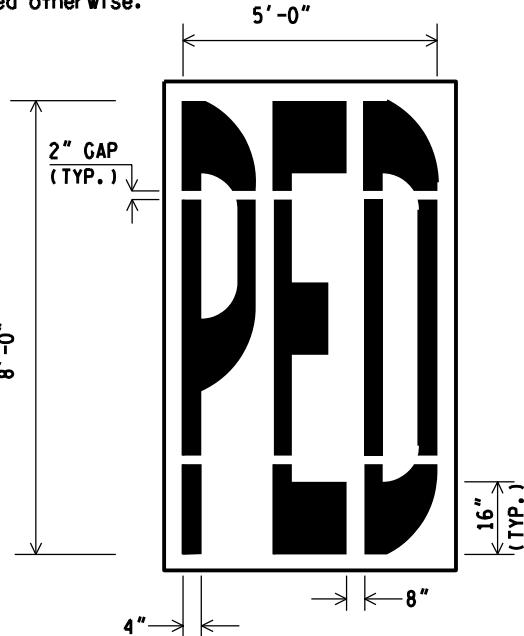
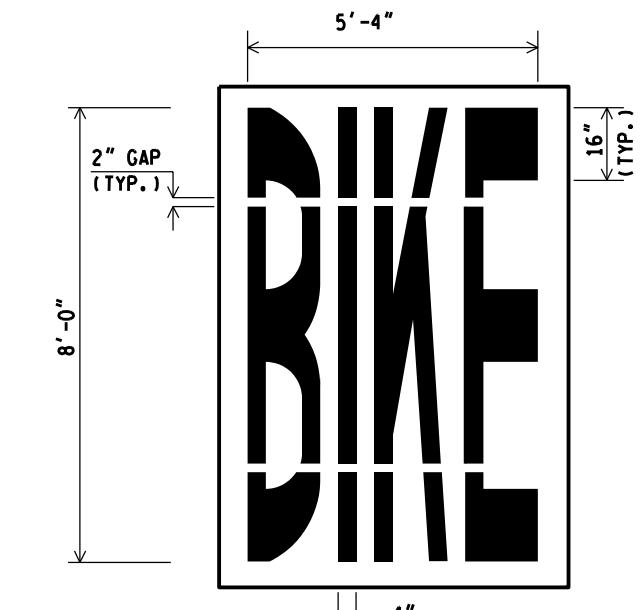
NOTES: 1. All letters are 16 inches wide unless noted otherwise.

2. All gaps between letters are 4 inches unless noted otherwise.

3. Rectangular area containing legend indicates template for liquid applied materials.

4. When placed on a shared-use path, reduce all vertical dimensions (except 2" liquid template gaps) by half.

5. 2" gaps shown are for liquid templates only and are not allowed in tape applications.



### LEGEND DETAILS

<b>MDOT</b> Michigan Department of Transportation
PREPARED BY TSD DIVISION
DRAWN BY: <u>LMF</u>
CHECKED BY: <u>JGM</u>

DEPARTMENT DIRECTOR Paul C. Ajegba
APPROVED BY: <u>Gregg Brunner, P.E.</u> Gregg Brunner Nov 2 2020 12:07 PM
DIRECTOR, BUREAU OF FIELD SERVICES
APPROVED BY: <u>Bradley C. Wieferich</u> Bradley C. Wieferich Oct 29 2020 4:29 PM
DIRECTOR, BUREAU OF DEVELOPMENT

Page 90 of

MICHIGAN DEPARTMENT OF TRANSPORTATION  
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

### PAVEMENT ARROW & MESSAGE DETAILS

49 09/21/20 03/25/20 PAVE-900-G

F.H.W.A. APPROVAL PLAN DATE SHEET 1 OF 10

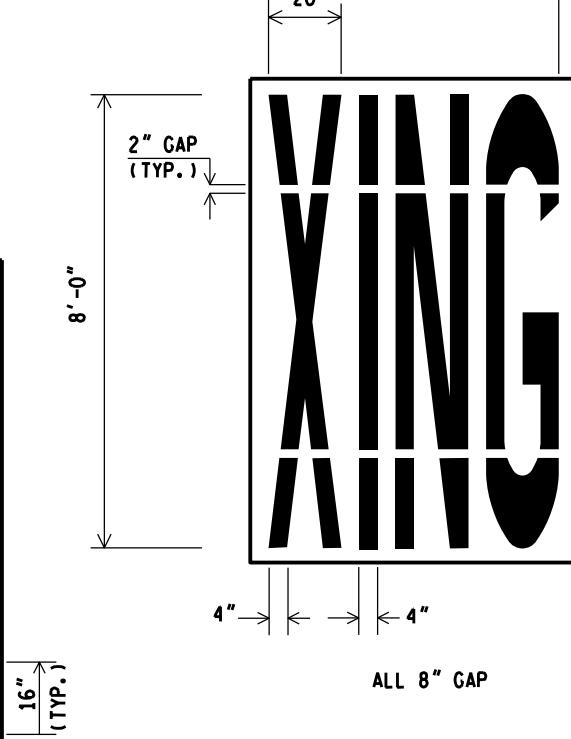
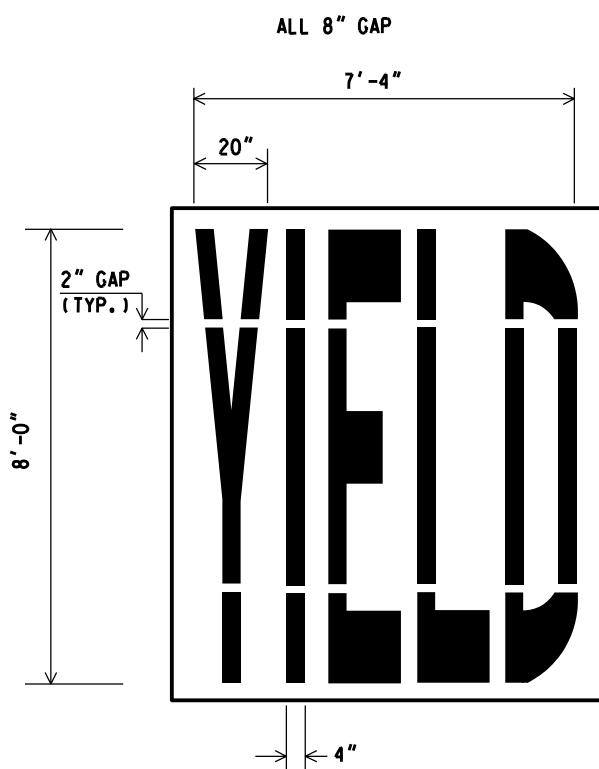
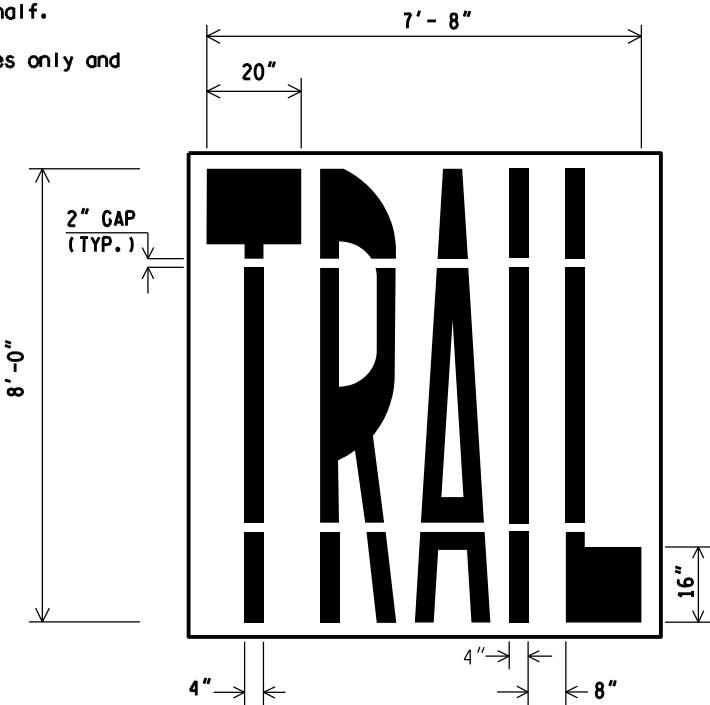
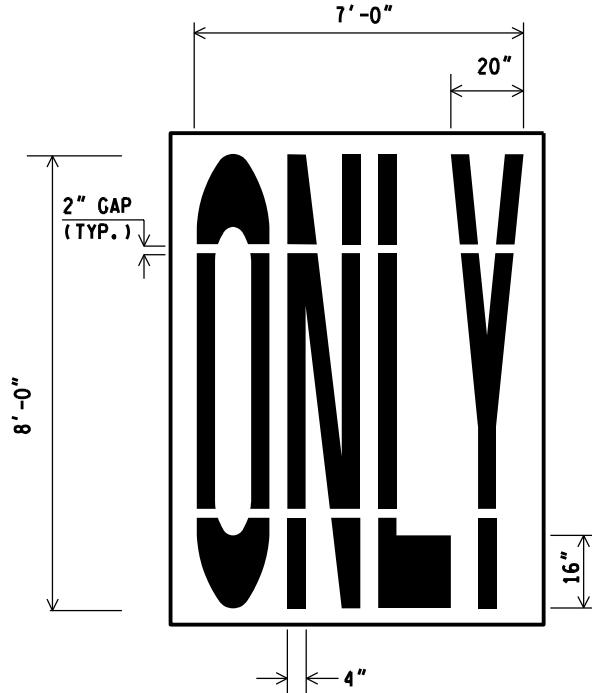
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## LEGEND DETAILS

NOT TO SCALE

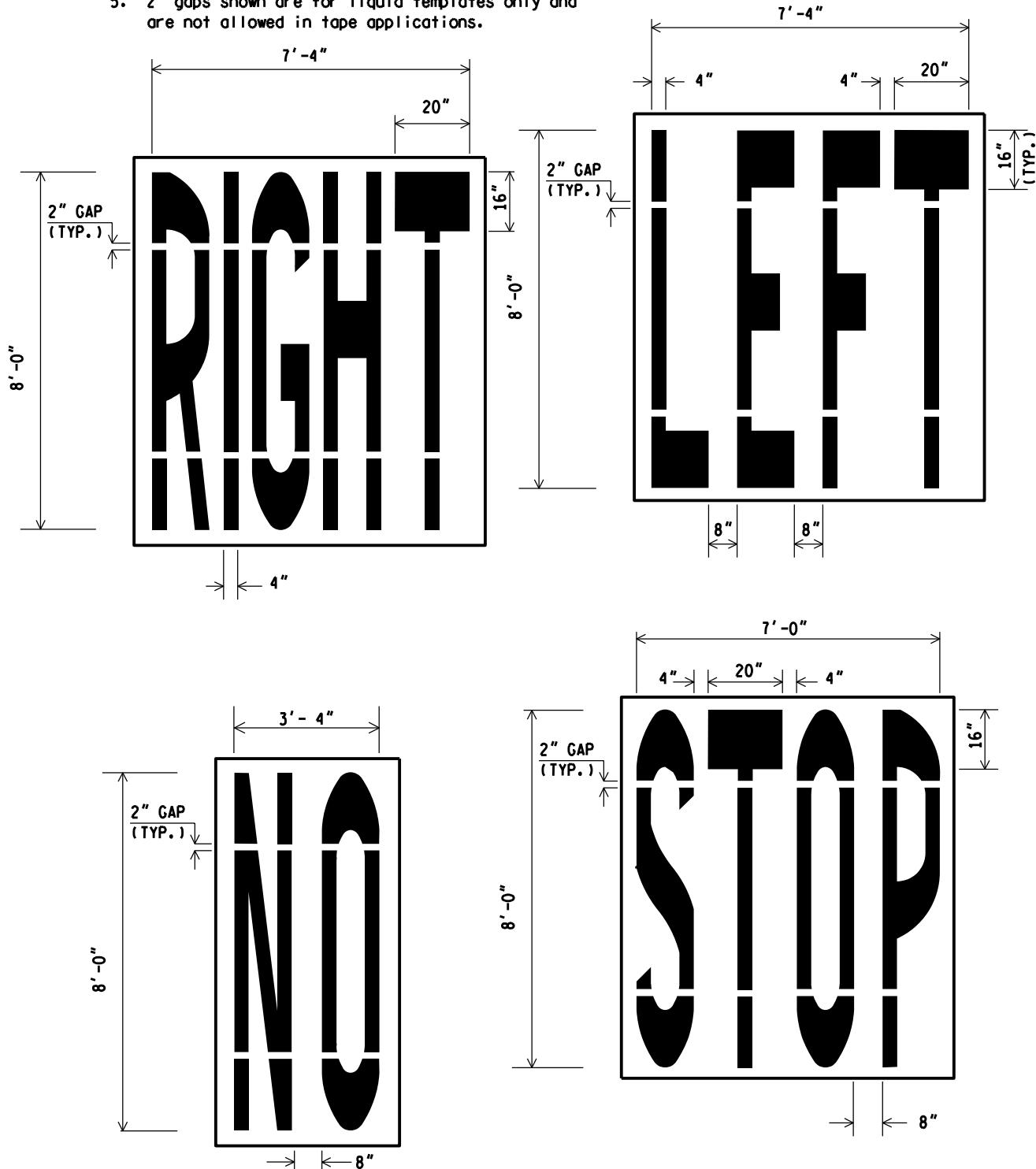
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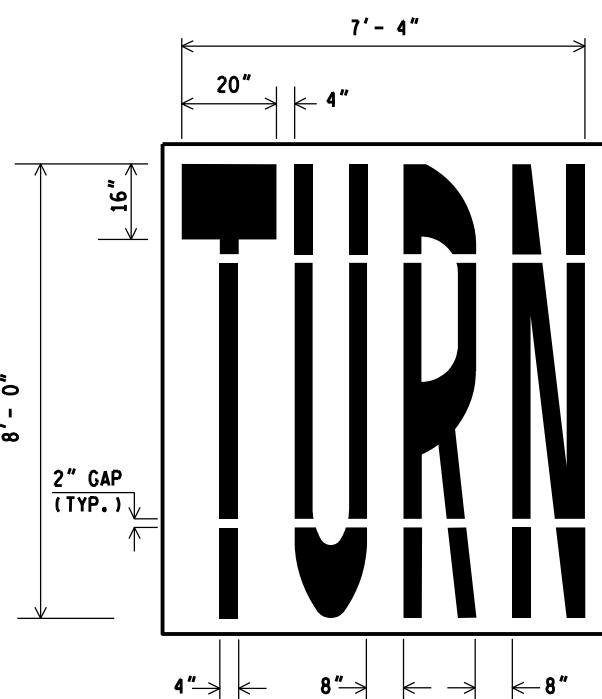
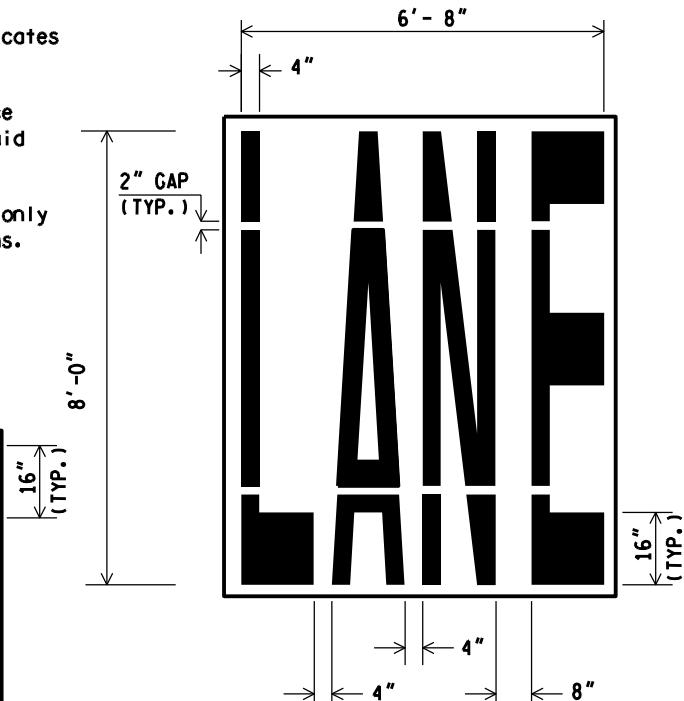
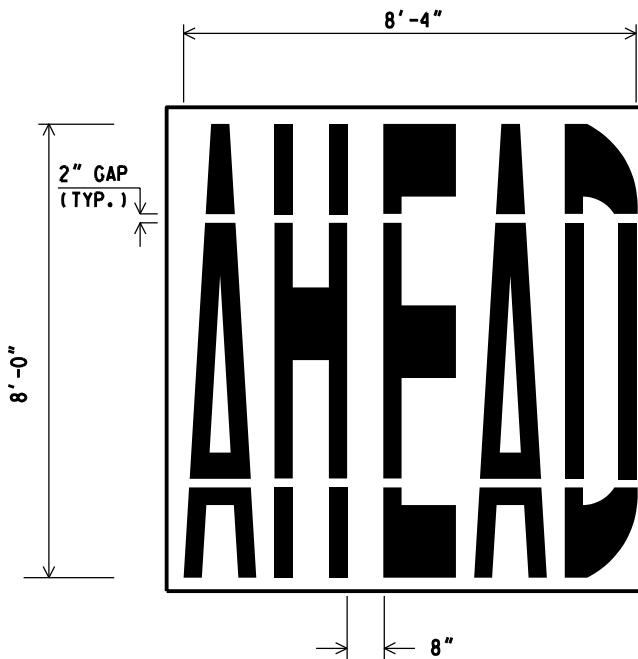
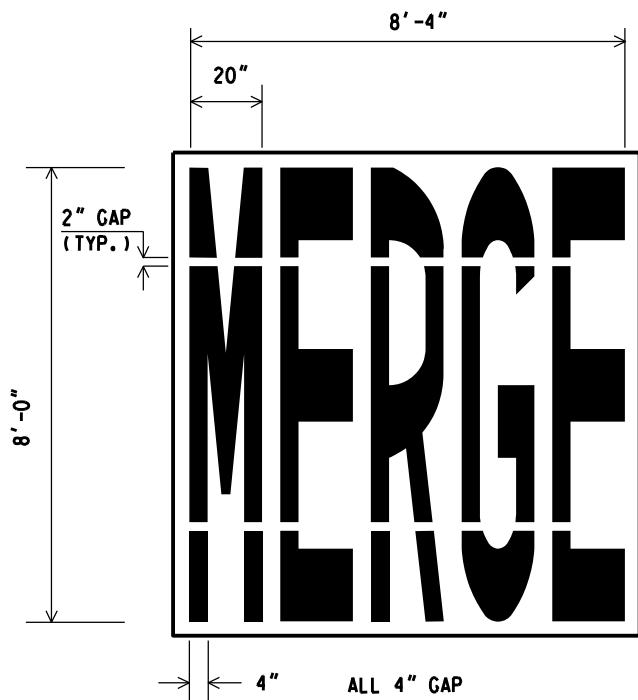
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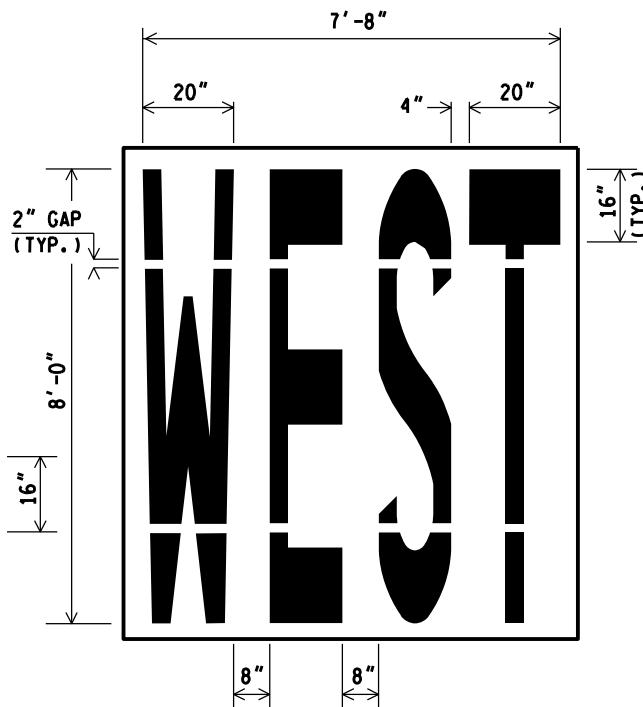
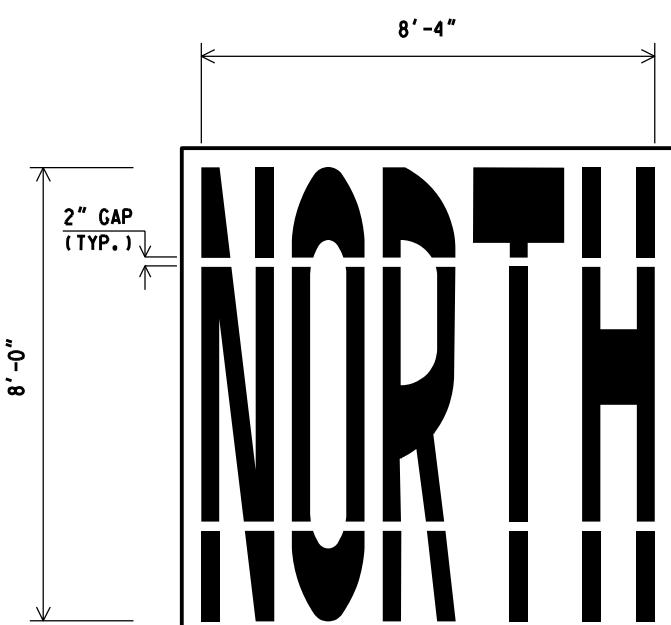
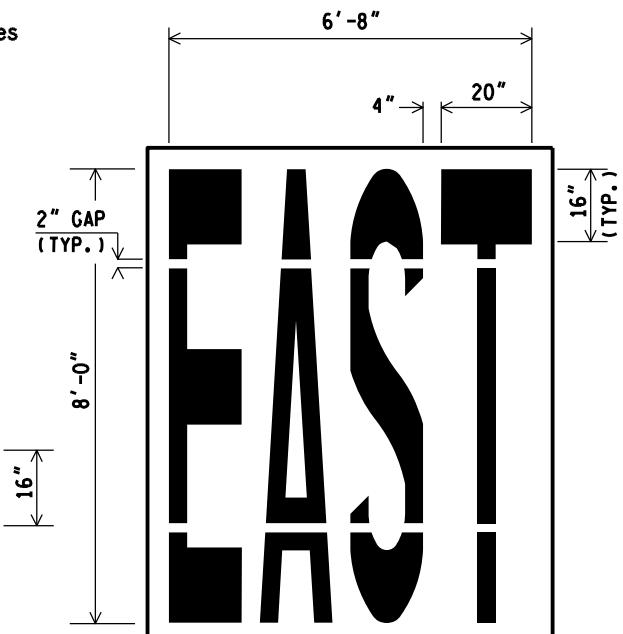
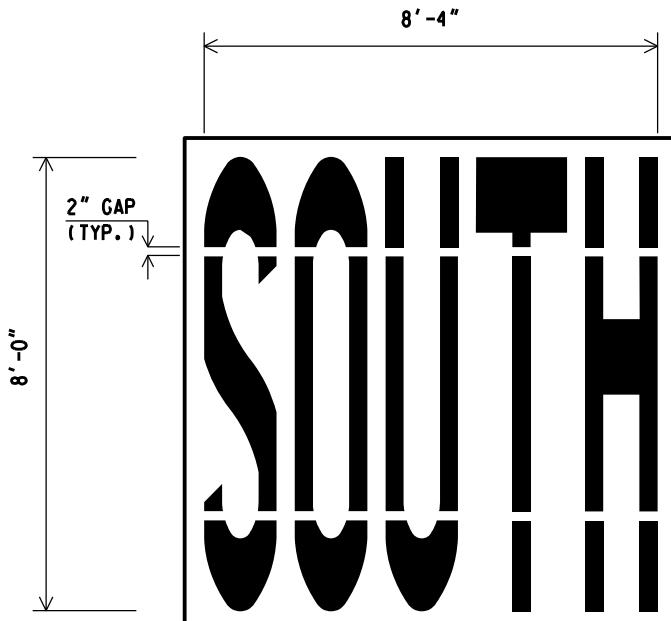
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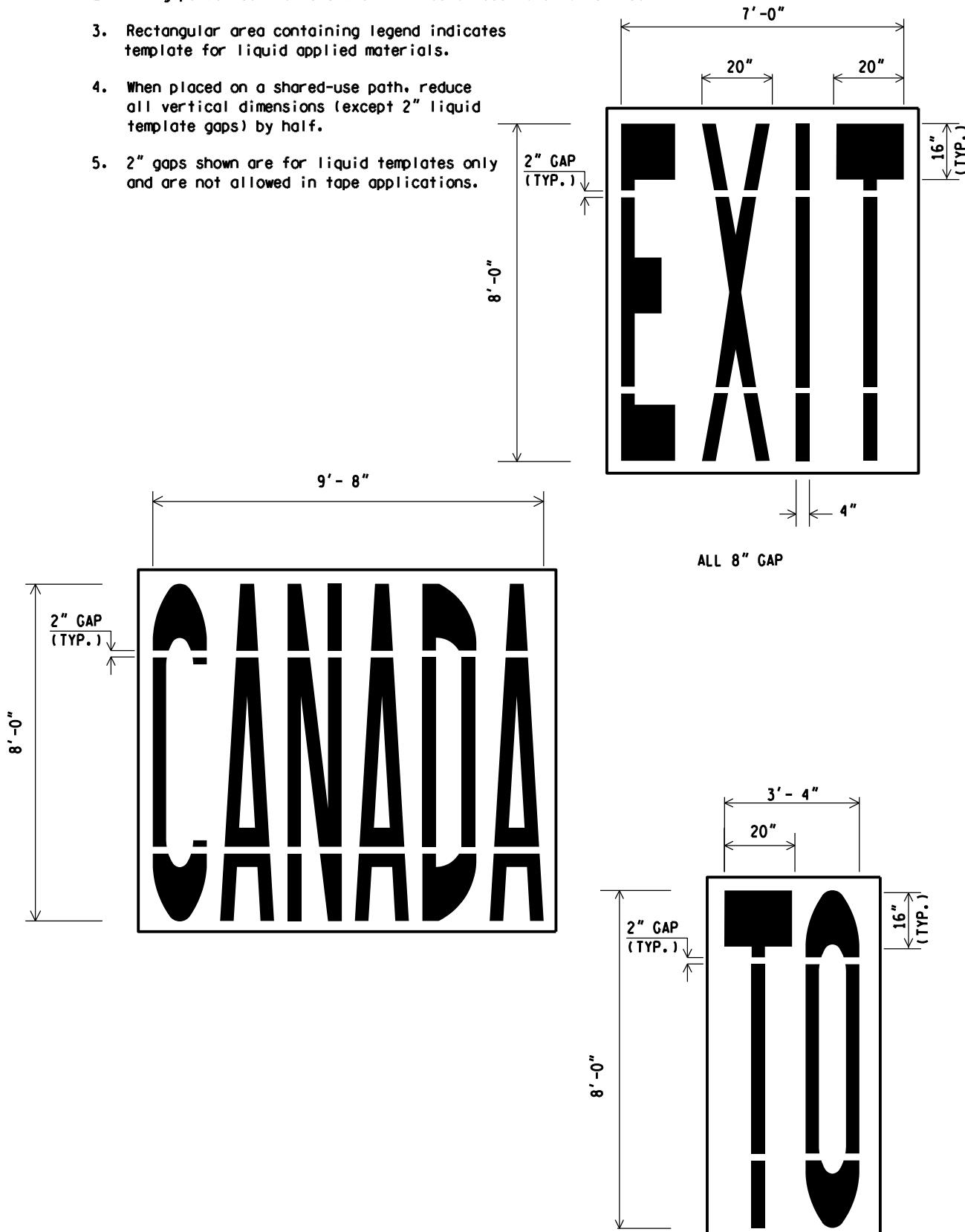
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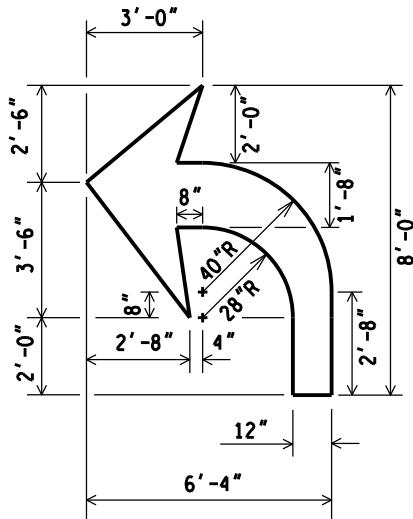


## LEGEND DETAILS

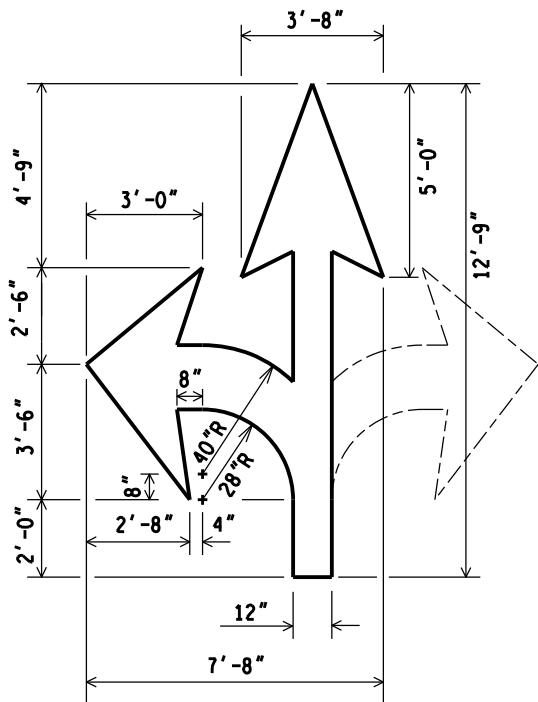
NOT TO SCALE

NOTE: 1. Templates for liquid applied materials on this sheet do not allow gaps.

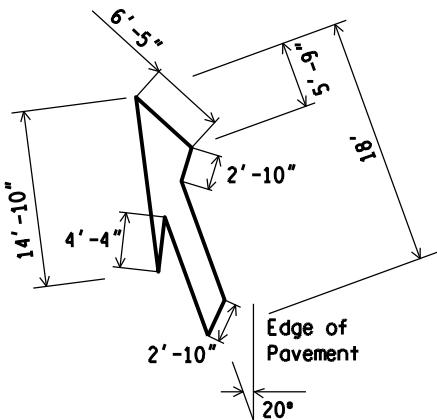
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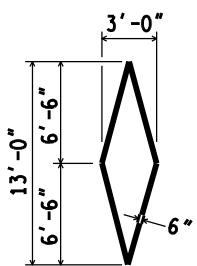
LEFT TURN ARROW  
(RIGHT TURN ARROW TO BE REVERSE)



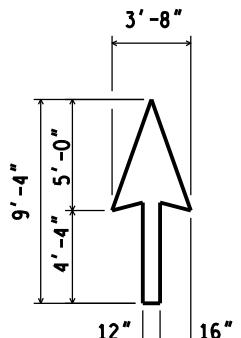
THRU RIGHT/LEFT TURN ARROW



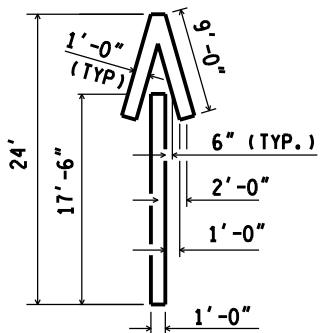
MERGE LEFT ARROW  
(MERGE RIGHT ARROW TO BE REVERSE)



DEDICATED LANE SYMBOL



THRU ARROW



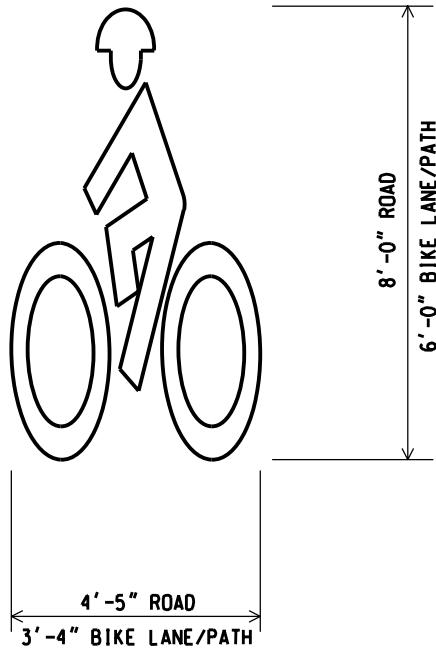
WRONG WAY ARROW

## PAVEMENT ARROW/SYMBOL DETAILS

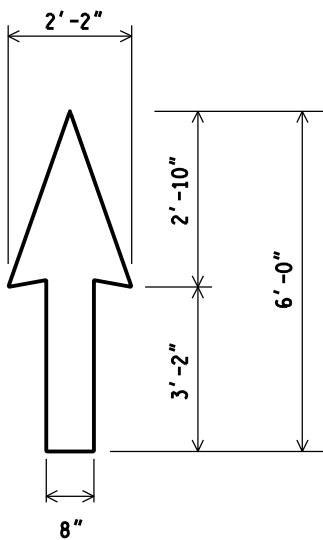
NOT TO SCALE

NOTES:

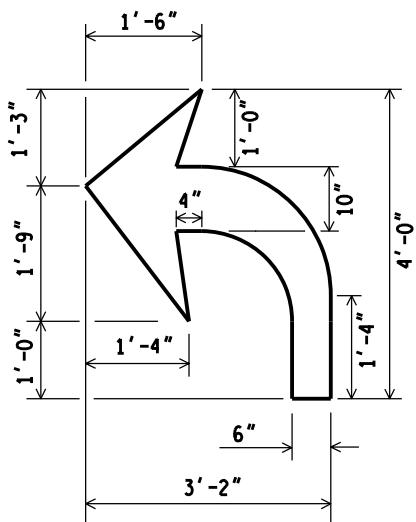
1. Templates for liquid applied materials on this sheet do not allow gaps.
2. Smaller (bike lane/path) bicycle symbol is to be used in bike lanes (including bike lanes on roadways), and on paths/trails.
3. The larger (road) bicycle symbol is intended to be used in conjunction with the "XING" legend in vehicle travel lanes in advance of a bike path/trail crossing the roadway.



BICYCLE SYMBOL



DIRECTIONAL ARROW FOR USE WITH BIKE LANE/PATH BICYCLE SYMBOL



TURN ARROW FOR USE WITH BIKE LANE/PATH BICYCLE SYMBOL  
(RIGHT TURN ARROW TO BE REVERSE)

## BICYCLE ARROW/SYMBOL DETAILS

NOT TO SCALE

## SPECIAL MARKING AREAS (SFT)

LEGEND	REMOVAL	RECESSING	MATERIAL	SYMBOL	REMOVAL	RECESSING	MATERIAL
AHEAD	67	70	28.86	ACCESSIBLE	12	13	11.11
BIKE	43	45	22.15	BICYCLE (ROAD)	26	31	10.54
BUS	43	45	18.55	BICYCLE (LANE/PATH)	16	18	5.93
CANADA	78	81	32.87	BIKE TURN ARROW, LT OR RT	4	6	4.11
EAST	54	56	21.71	DEDICATED LANE (HOV)	11	13	10.24
EXIT	56	59	17.76	DIRECT. ARROW (BIKE)	5	7	5.07
LANE	54	56	22.30	LEFT, RIGHT ARROW	29	34	28.99
LEFT	59	62	19.11	LT ROUNDABOUT ARROW	18	23	17.48
MERGE	67	70	33.28	LT, RT, THRU ARROW	41	48	40.26
NO	27	29	12.92	MERGE ARROW	43	47	42.17
NORTH	67	70	29.53	RAILROAD	66	75	60.89
ONLY	56	59	20.90	RAILROAD-ALTERNATE	70	73	59.06
PED	40	43	17.63	RT, LT ROUNDABOUT ARROW	23	29	22.19
RIGHT	59	62	25.10	RT, THRU, LT ROUNDABOUT ARROW	29	38	28.31
SCHOOL	78	81	32.58	SHARROW	21	30	9.26
SOUTH	67	70	27.83	THRU ARROW	13	16	13.16
STOP	56	59	21.50	THRU, LT ROUNDABOUT ARROW	24	31	23.60
TO	27	29	10.43	THRU, LT TURN ARROW	29	34	28.14
TRAIL	62	64	22.10	THRU, RT TURN ARROW	29	34	28.14
TURN	59	62	23.04	TURN ARROW, LT OR RT	17	19	16.42
WEST	62	64	24.42	WRONG WAY ARROW	35	41	34.56
XING	54	56	20.13	YIELD TRIANGLE	3	4	3.00
YIELD	59	61	22.91				

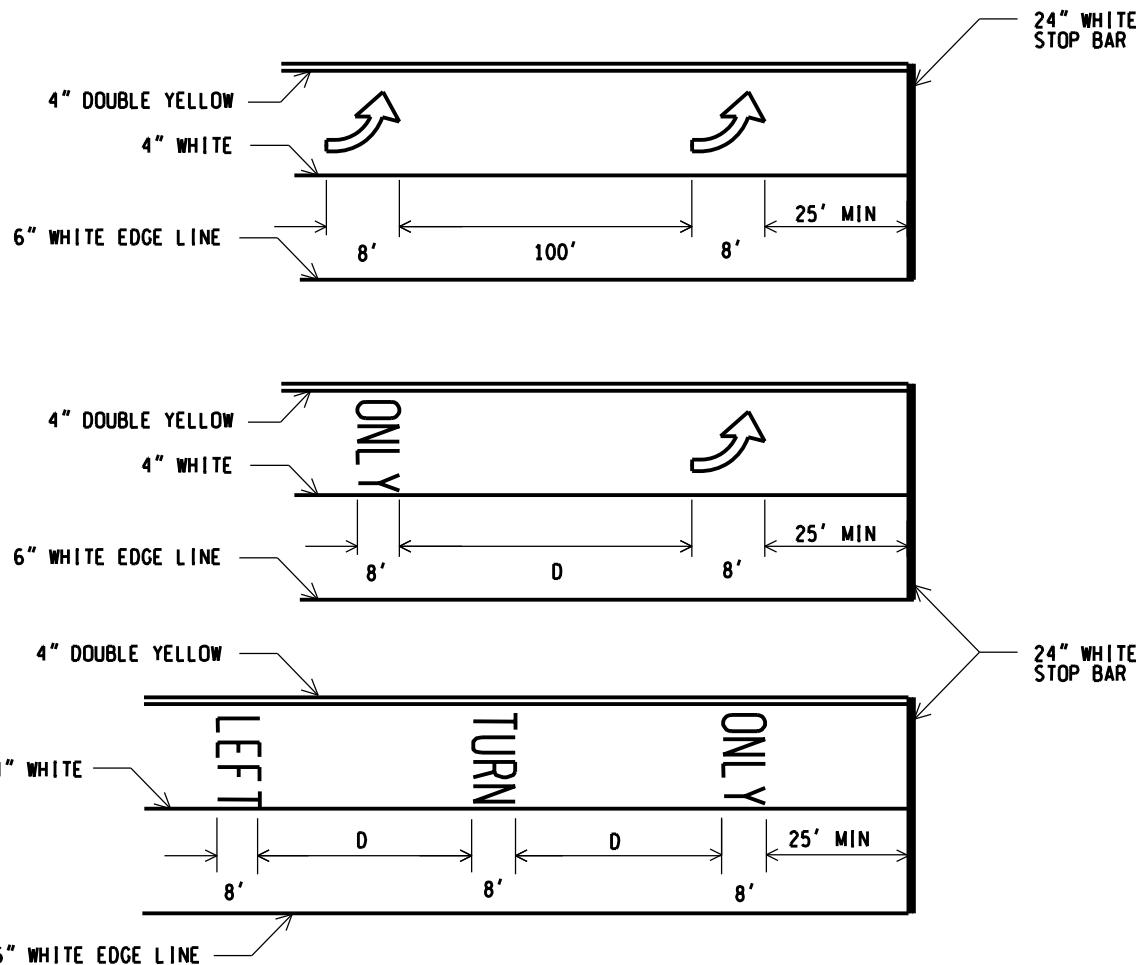
### REMOVAL AND PLACEMENT DETAILS

#### NOTES:

1. Material placement areas shown are for liquid-applied special markings, and reflect the allowable template gaps in legends.
2. Railroad marking areas do not include the stop bar markings.

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	Page 98 of 49 09/21/20 F.H.W.A. APPROVAL	03/25/20 PLAN DATE	PAVE-900-G	SHEET 9 OF 10
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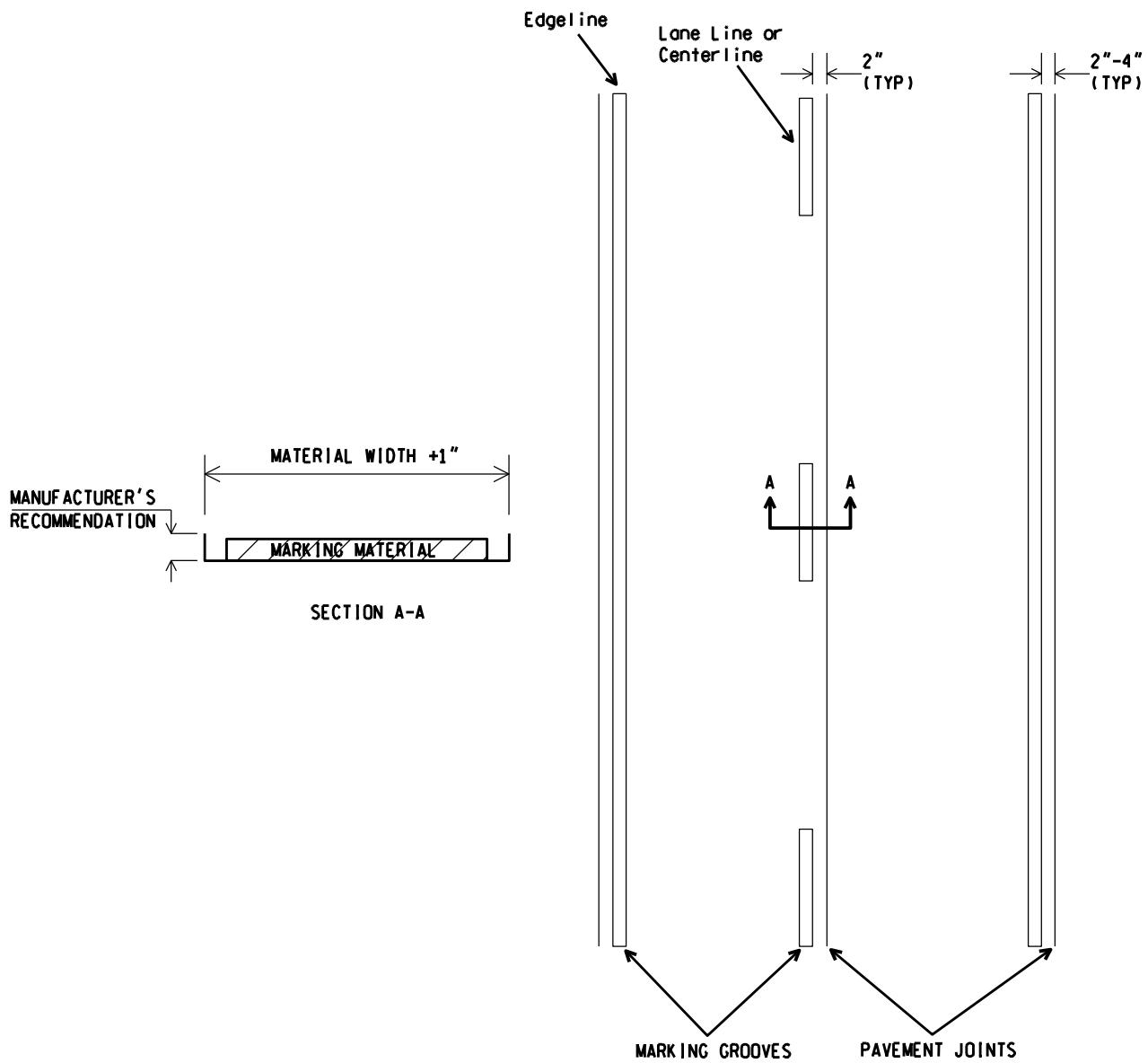
## TYPICAL SPACING OF ARROW AND PAVEMENT MESSAGES

POSTED SPEED (MPH)	DISTANCE "D" (FT)
25 AND BELOW	32
30-35	48
40-45	64
50 AND ABOVE	80

### NOTES:

1. All special markings (arrow, message and symbol) shall be white.
2. When arrow and pavement message are used together, the arrow should be located downstream of the pavement message and separated from the pavement message by a distance of "D" (measured from the top of the message to the base of the arrow) as shown above.
3. When a series of pavement messages are used, they should be separated by a distance of "D" related to the posted speed, as shown in the table above. All symbols and legends shall be positioned in the center of the lane.

NOT TO SCALE



## RECESSING LONGITUDINAL MARKINGS

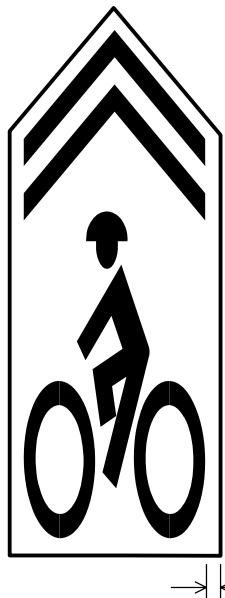
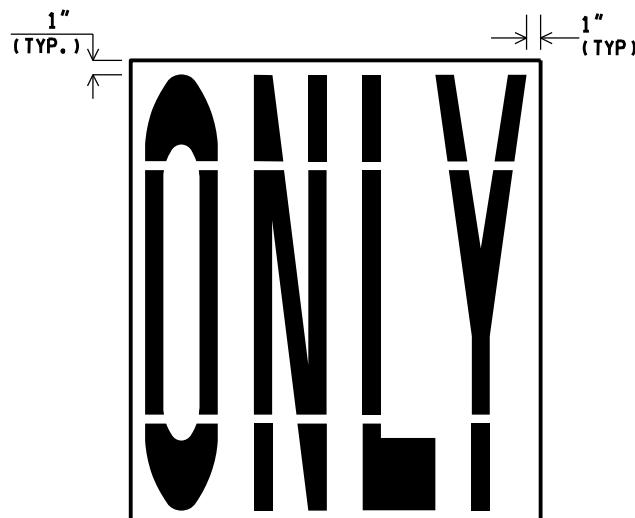
### NOTES:

1. Tolerance on all transverse dimensions is  $\pm 1/8"$ .
2. Tolerance on all recessing depths is  $\pm 5$  mils.

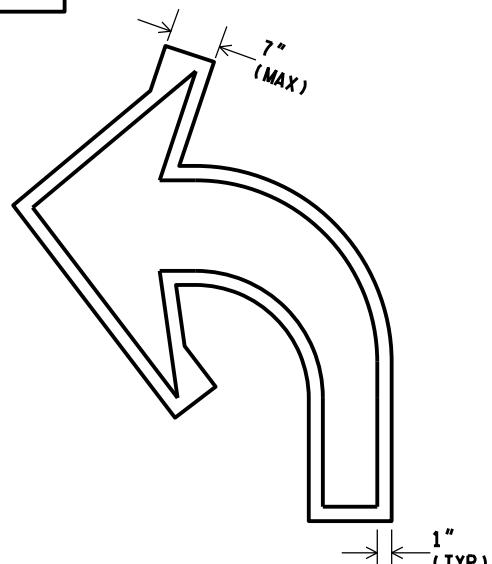
<b>MDOT</b> <small>Michigan Department of Transportation</small>	DEPARTMENT DIRECTOR Paul C. Ajegba  APPROVED BY: <u>Gregg Brunner, P.E.</u> Gregg Brunner Nov 2 2020 12:07 PM  APPROVED BY: <u>DIRECTOR, BUREAU OF FIELD SERVICES</u>	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR  <b>PAVEMENT MARKING</b> <b>RECESSING DETAILS</b>
		DRAWN BY: <u>MKB</u>  APPROVED BY: <u>Bradley C. Wieferich</u> Bradley C. Wieferich Nov 5 2020 5:44 AM  APPROVED BY: <u>DIRECTOR, BUREAU OF DEVELOPMENT</u>



FOR STOP BARS, CROSSWALKS, & CROSS HATCHING



FOR IRREGULAR SYMBOLS



FOR ARROWS  
(ALL TYPES)

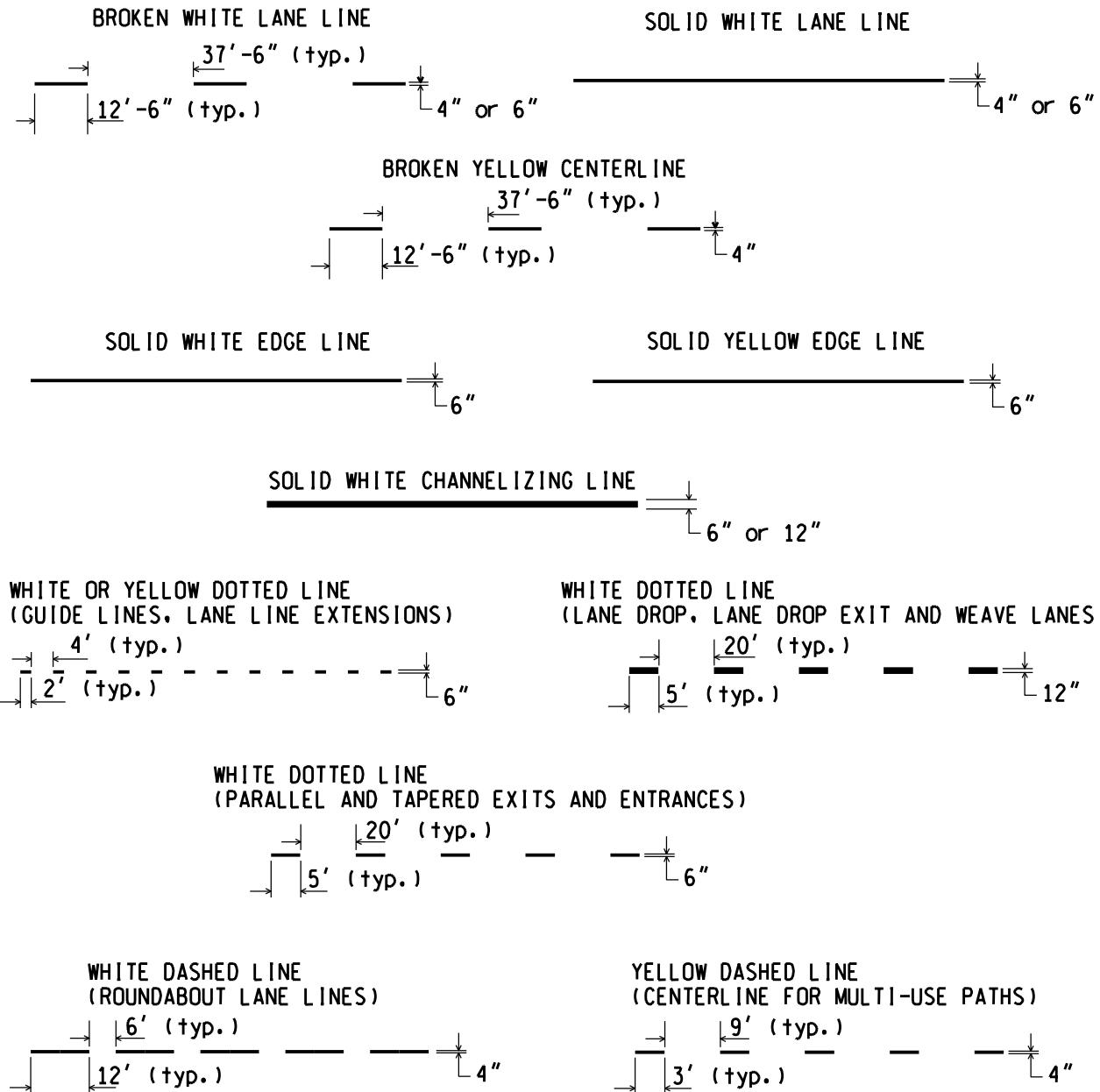
## RECESSING SPECIAL MARKINGS

### NOTES:

1. Tolerance on all transverse dimensions is  $\pm 1/8$  inch.
2. Tolerance on all recessing depths is  $\pm 5$  mils.
3. The recess should follow the shape of the special marking as closely as possible. Where the shape cannot be followed, use a grinder head with a maximum width of 7 inches.
4. For irregular shapes agree upon a recessing layout with the Engineer. See Special Marking Symbols and Legends (CAD drawing) for recommendations.
5. See PAVE-900 for special marking recessing payment areas.

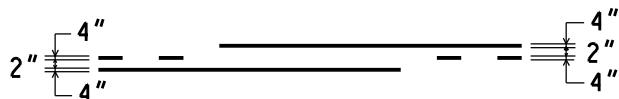
NOT TO SCALE

# TYPES OF PERMANENT LONGITUDINAL LINES

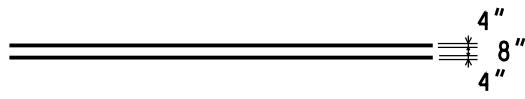


## LINE PATTERNS

### TWO - LANE PASSING PROHIBITED (YELLOW)



### DOUBLE SOLID YELLOW (OR WHITE)



<b>PREPARED BY</b> TSD DIVISION	<b>APPROVED BY:</b> DIRECTOR, BUREAU OF FIELD SERVICES	<b>APPROVED BY:</b> DIRECTOR, BUREAU OF DEVELOPMENT
DRAWN BY: <u>LME</u>	Gregg Brunner, P.E. Nov 2 2020 12:08 PM	Bradley C. Wieferich Nov 5 2020 5:46 AM
CHECKED BY: <u>JGM</u>	Page 102 of 14909/21/20	F.H.W.A. APPROVAL

DEPARTMENT DIRECTOR  
Paul C. Ajegba

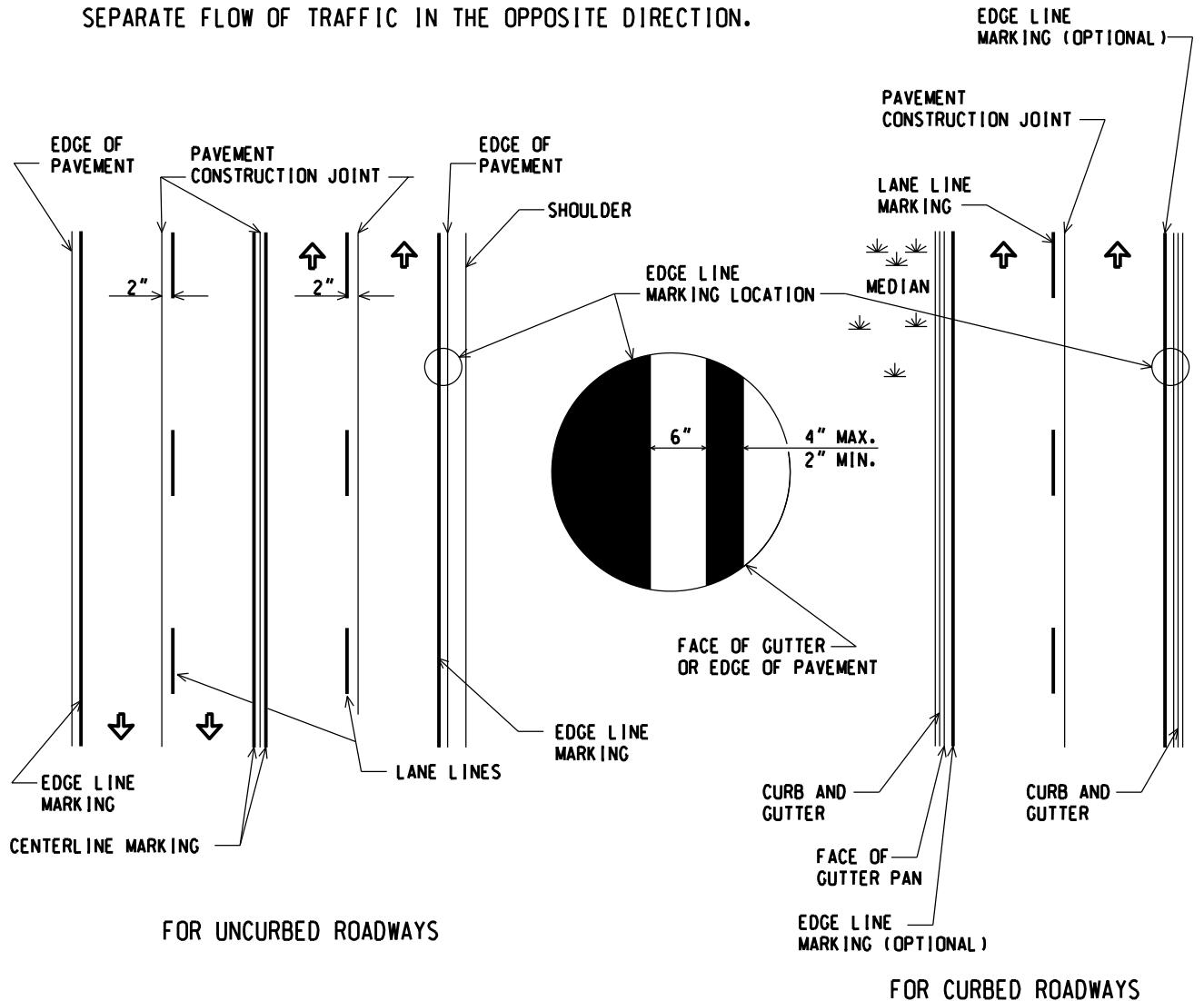
Gregg Brunner, P.E. Gregg Brunner  
Nov 2 2020 12:08 PM

Bradley C. Wieferich Bradley C. Wieferich  
Nov 5 2020 5:46 AM

MICHIGAN DEPARTMENT OF TRANSPORTATION  
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

## LONGITUDINAL LINE TYPES & PLACEMENT

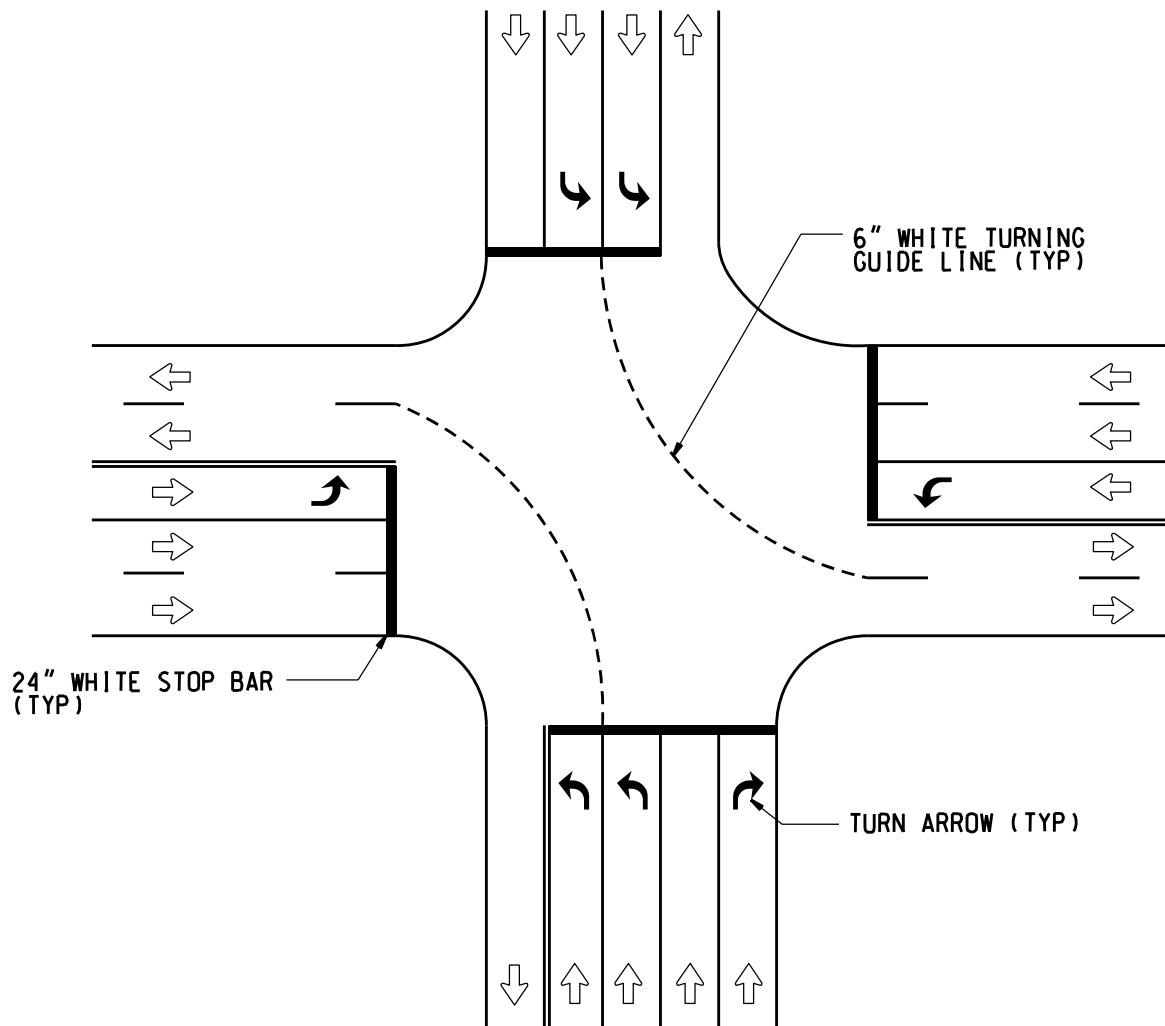
**BASIC COLOR RULE: WHITE LINES SEPARATE FLOW OF TRAFFIC IN THE SAME DIRECTION, YELLOW LINES SEPARATE FLOW OF TRAFFIC IN THE OPPOSITE DIRECTION.**



**Notes:**

1. On all divided highways, lane lines shall be offset 2 inches from pavement construction joints toward the median side.
2. On 2-lane, 2-way north - south roadways a broken yellow centerline shall be offset 2 inches to the left of pavement construction joints when facing northward. Double solid yellow or solid and broken yellow centerline may straddle the construction joint.
3. On 2-lane, 2-way east - west roadways, a broken yellow centerline shall be offset 2 inches to the left of pavement construction joints when facing eastward. Double solid yellow or solid and broken yellow centerlines may straddle the construction joint.
4. When a centerline construction joint does not correspond to the geometric centerline of the roadway for roadway segments over  $\frac{1}{2}$  mile, place the centerline in the location that will provide lanes of equal width unless directed otherwise by the Engineer.

**NOT TO SCALE**



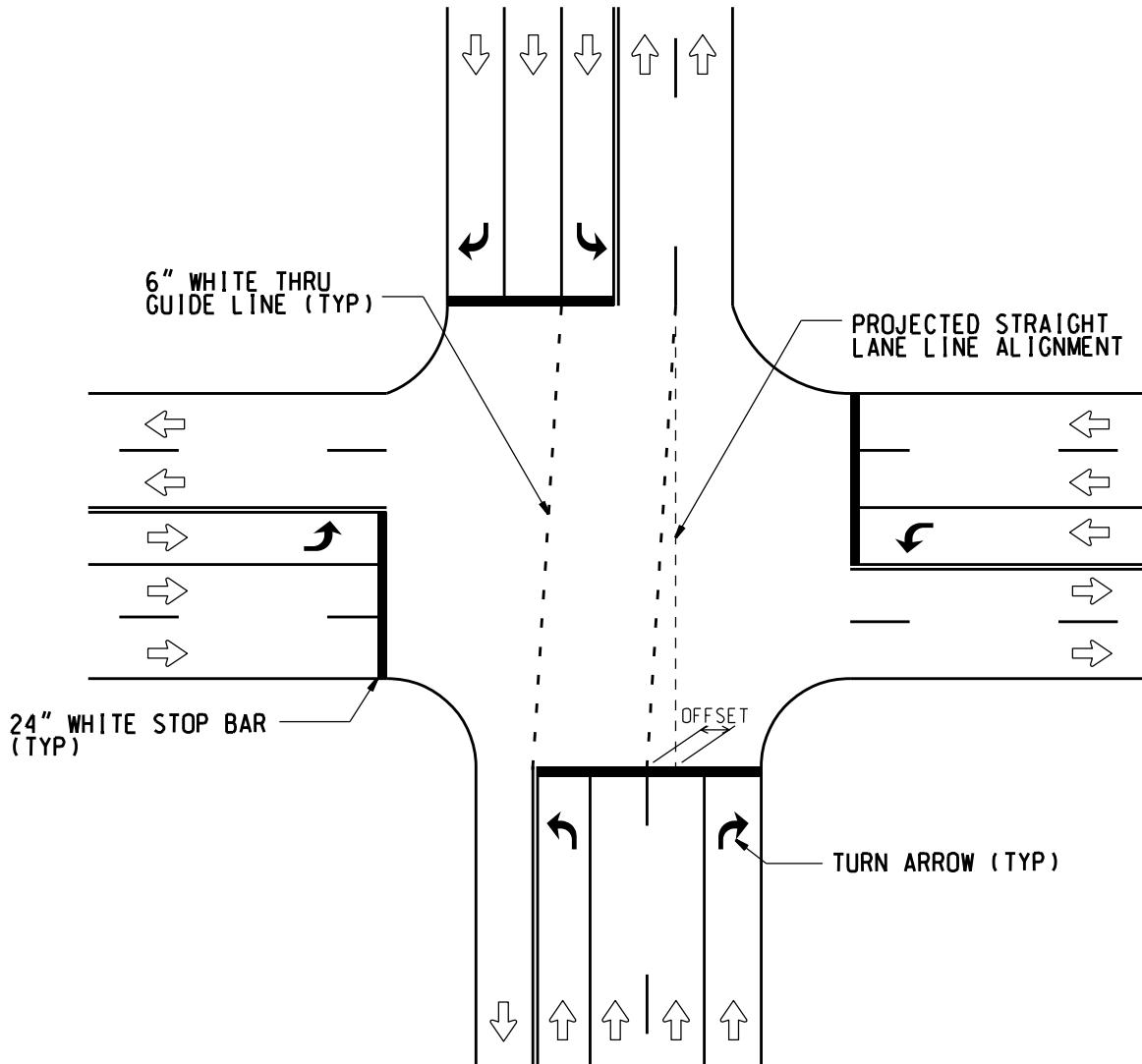
## TURNING GUIDE LINES

### NOTES:

1. See PAVE-900 for symbol details.
2. See PAVE-905 for line patterns.
3. Turning guide lines required for all locations where 2 or more lanes may turn the same direction.
4. Turning guide lines may be dotted (overlay cold plastic) or solid (sprayable thermoplastic). Only use sprayable thermoplastic when project longitudinal lines are also sprayable thermoplastic.
5. Dotted turning guide lines must be recessed. Recessing optional for solid turning guide lines.
6. Evaluate road conditions when more receiving lanes are present than turning lanes to determine which lanes the turning guide lines should lead to (radius considerations, lanes dropping, etc.).
7. Turning guide lines should be laid out in the field based on actual vehicle movements rather than assigned a design radius. Ensure the layout does not force turning vehicles to encroach on the turn/thru lanes of the receiving leg and allows opposing movements occurring at the same time room to safely clear one another.

NOT TO SCALE

 <b>PREPARED BY</b> <b>TSMD DIVISION</b>	DEPARTMENT DIRECTOR Paul C. Ajegba  APPROVED BY: <u>Gregg Brunner, P.E.</u> Gregg Brunner Nov 2 2020 12:08 PM  <b>DIRECTOR, BUREAU OF FIELD SERVICES</b>	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR  <b>GUIDE LINE PAVEMENT MARKINGS</b>			
		DRAWN BY: <u>MKB</u>	Page 104 of 14909/21/20	03/25/20	PAVE-907-A
CHECKED BY: <u>CMW</u>	APPROVED BY: <u>Bradley C. Wieferich</u> Bradley C. Wieferich Nov 5 2020 5:46 PM		F.H.W.A. APPROVAL	PLAN DATE	SHEET 1 OF 2

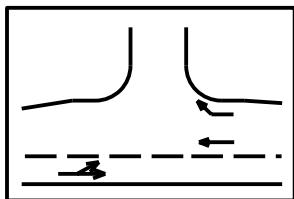


## THRU GUIDE LINES

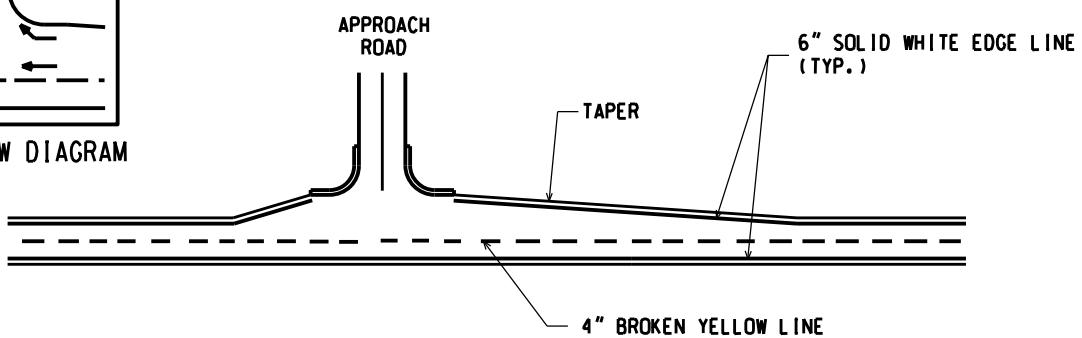
### NOTES:

1. See PAVE-900 for symbol details.
2. See PAVE-905 for line patterns.
3. Thru guide lines required for offsets of 2 to 6 feet. Optional for offsets less than 2 feet. Contact the Geometrics Unit if the offset would be greater than 6 feet.
4. Thru guide lines may be dotted (overlay cold plastic or sprayable thermoplastic) or solid (sprayable thermoplastic). Only use sprayable thermoplastic when project longitudinal lines are also sprayable thermoplastic.
5. Cold plastic dotted thru guide lines must be recessed. Recessing optional for sprayable thermoplastic applications.
6. For multilane movements use the thru guide line to extend the lane line(s). For a single lane movement use the thru guide line to extend the left (driver's side) line.

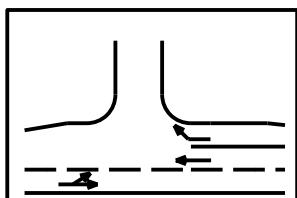
NOT TO SCALE



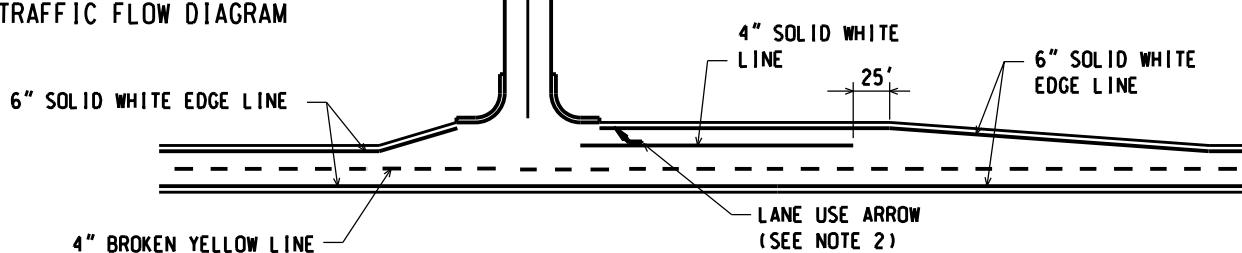
TRAFFIC FLOW DIAGRAM



## INTERSECTION WITH RIGHT TURN TAPER



TRAFFIC FLOW DIAGRAM

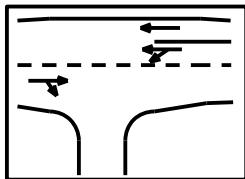


## INTERSECTION WITH RIGHT TURN LANE

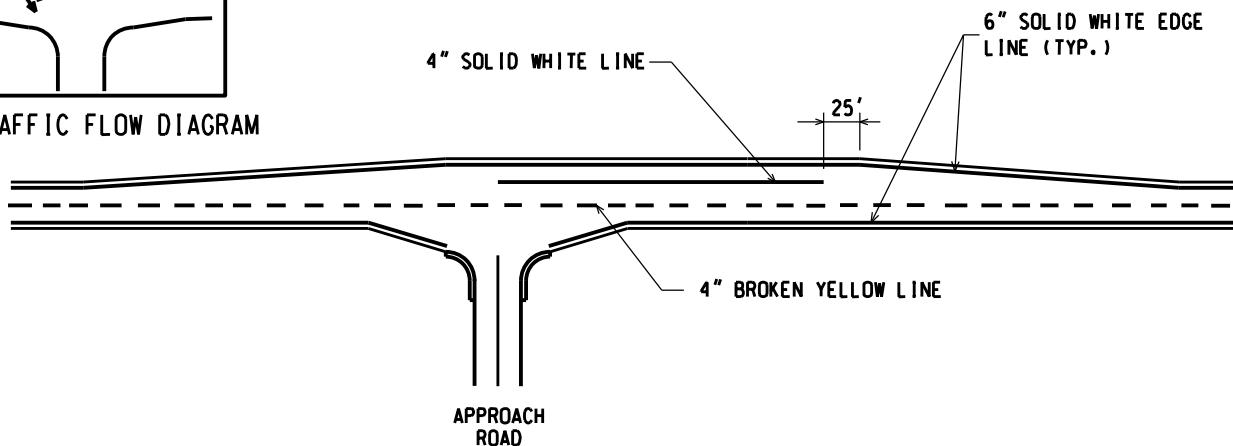
### Notes:

1. Paint intersection tapers greater than 50 ft in length.
2. Arrow markings should be installed according to PAVE-900, PAVE-935 and PAVE-940, if applicable.
3. Where the paved shoulder is 5 ft or greater in width approaching an intersection, radius the edge line to the curb/edge of pavement on both sides of the intersection. For narrower shoulders, the edge line may be simply discontinued across the intersection (blunt ends).

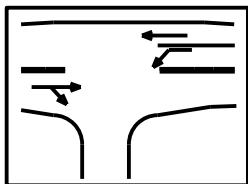
<p><b>PREPARED BY</b> TSMO DIVISION</p>	<p>DEPARTMENT DIRECTOR Paul C. Ajegba</p> <p>APPROVED BY: <u>Gregg Brunner, P.E.</u> Gregg Brunner Nov 2 2020 5:48 PM DIRECTOR, BUREAU OF FIELD SERVICES</p> <p>APPROVED BY: <u>Bradley C. Wieferich</u> Bradley C. Wieferich Nov 5 2020 5:48 PM DIRECTOR, BUREAU OF DEVELOPMENT</p>	<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR</p> <p><b>PAVEMENT MARKINGS FOR NON-SIGNALIZED INTERSECTIONS</b></p>		
		14909/21/20	03/25/20	PAVE-930-D
DRAWN BY: <u>LMF</u>		F.H.W.A. APPROVAL	PLAN DATE	SHEET 1 OF 8
CHECKED BY: <u>JGM</u>				



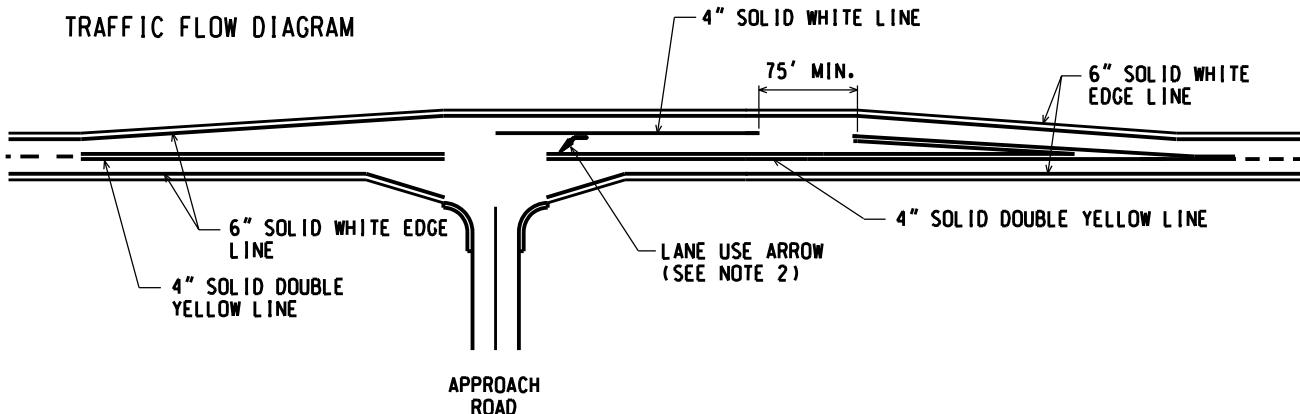
TRAFFIC FLOW DIAGRAM



### "T" INTERSECTION WITH PASSING FLARE



TRAFFIC FLOW DIAGRAM

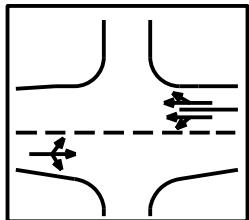


### "T" INTERSECTION WITH MANDATORY LEFT TURN LANE

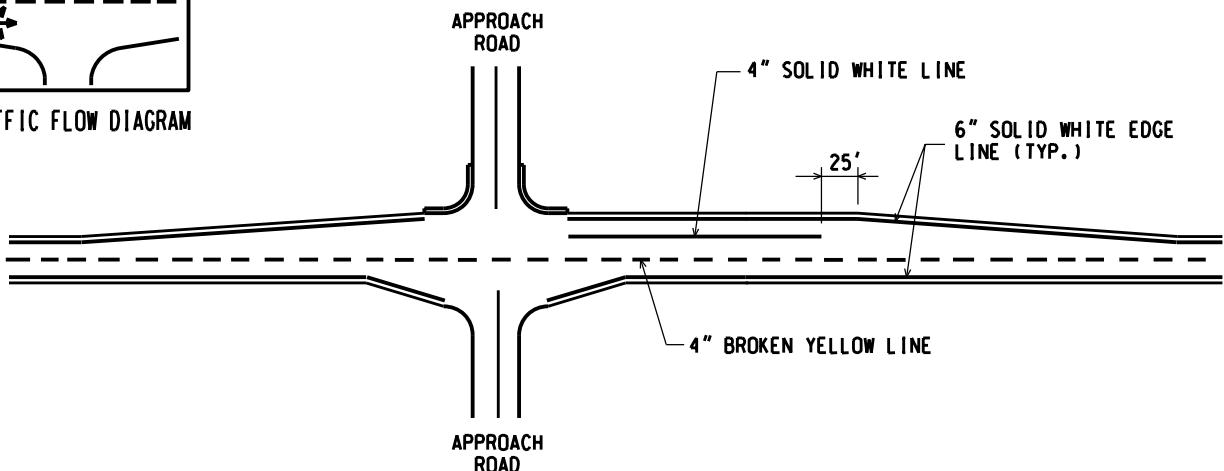
#### Notes:

1. Paint intersection tapers greater than 50 ft in length.
2. Arrow markings should be installed according to PAVE-900, PAVE-935 and PAVE-940, if applicable.
3. Where the paved shoulder is 5 ft or greater in width approaching an intersection, radius the edge line to the curb/edge of pavement on both sides of the intersection. For narrower shoulders, the edge line may be simply discontinued across the intersection (blunt ends).

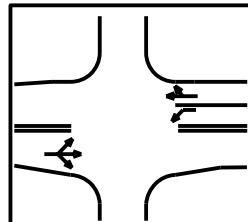
NOT TO SCALE



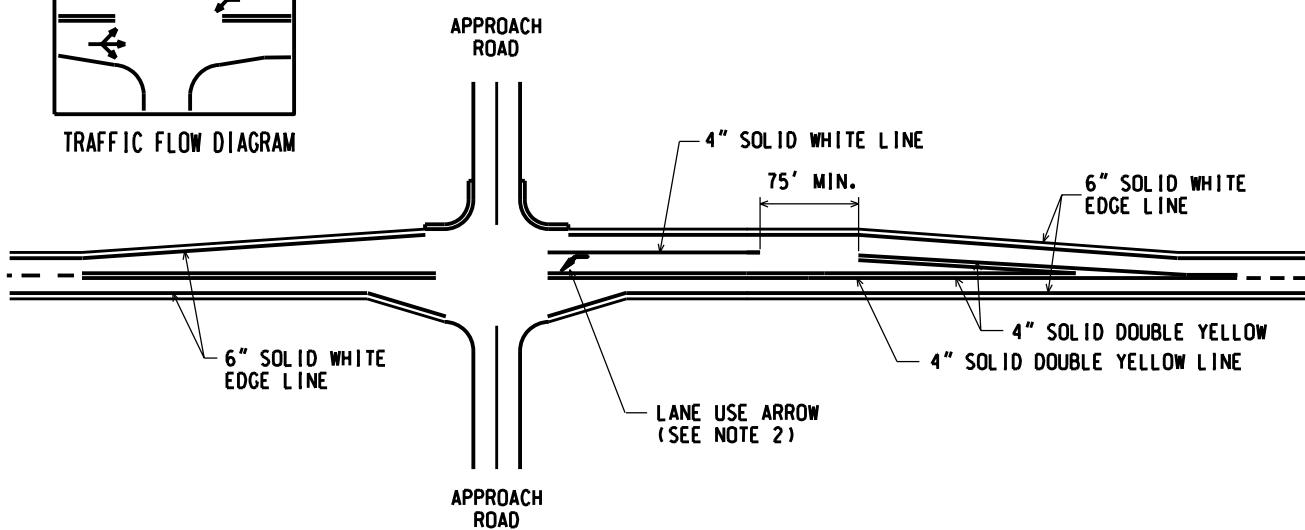
TRAFFIC FLOW DIAGRAM



## FULL INTERSECTION WITH PASSING FLARE



TRAFFIC FLOW DIAGRAM

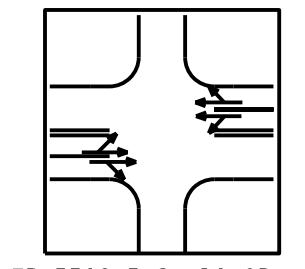


## FULL INTERSECTION WITH MANDATORY LEFT TURN LANE

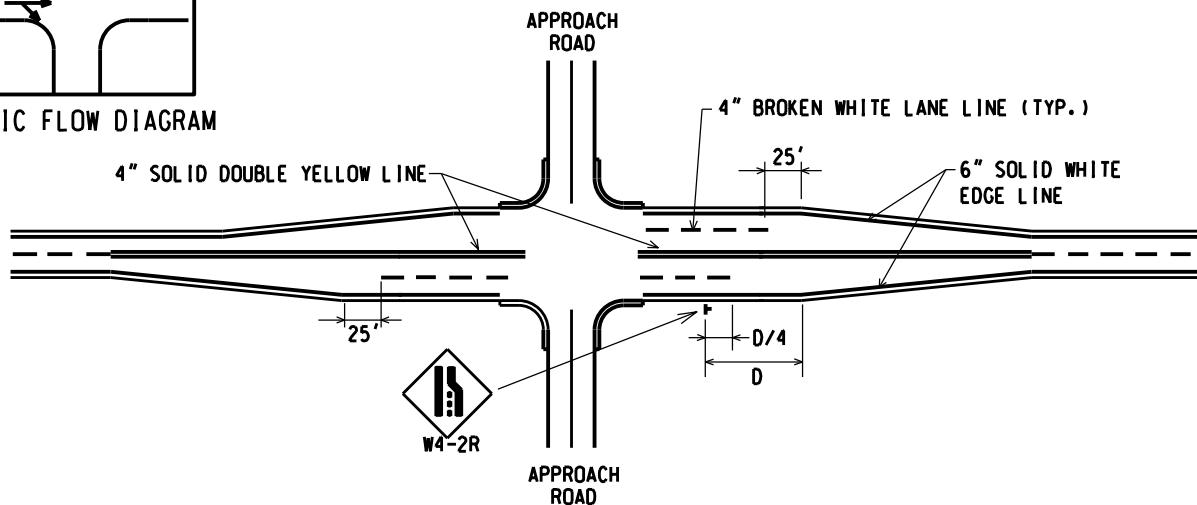
### Notes:

1. Paint intersection tapers greater than 50 ft in length.
2. Arrow markings should be installed according to PAVE-900, PAVE-935 and PAVE-940, if applicable.
3. Where the paved shoulder is 5 ft or greater in width approaching an intersection, radius the edge line to the curb/edge of pavement on both sides of the intersection. For narrower shoulders, the edge line may be simply discontinued across the intersection (blunt ends).

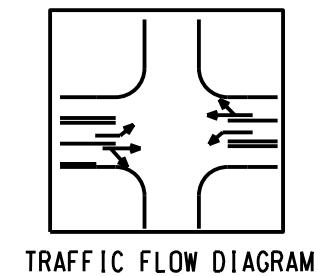
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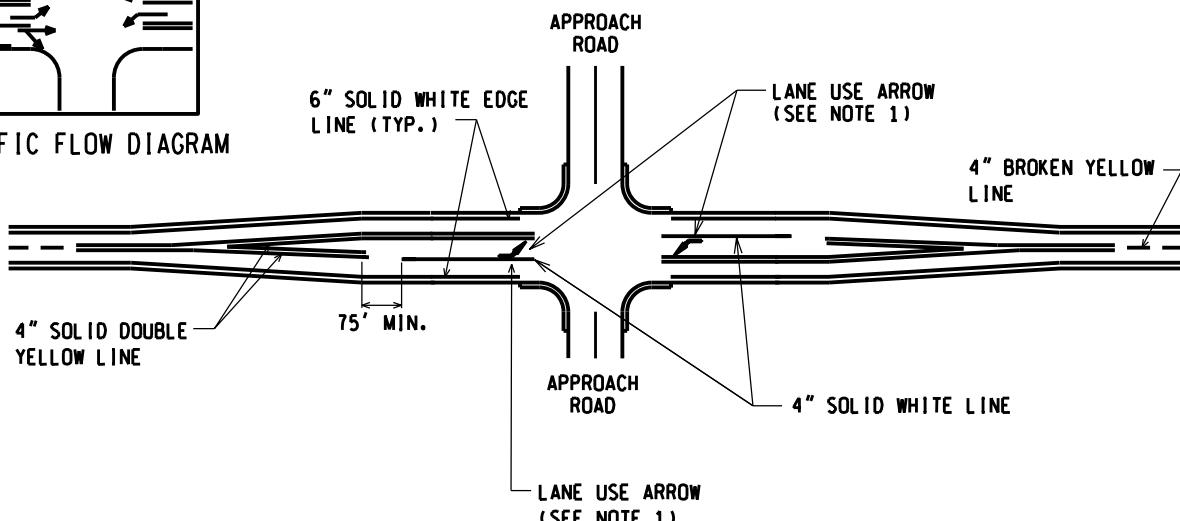
TRAFFIC FLOW DIAGRAM



## FULL INTERSECTION WITH FAR SIDE LANE DROP



TRAFFIC FLOW DIAGRAM



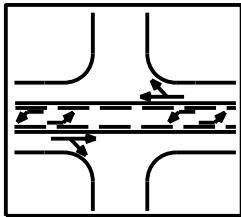
## FULL INTERSECTION WITH PARTIAL FLARE WITH DEVELOPED CENTER LEFT-TURN LANE

(MAJOR CROSS STREET)

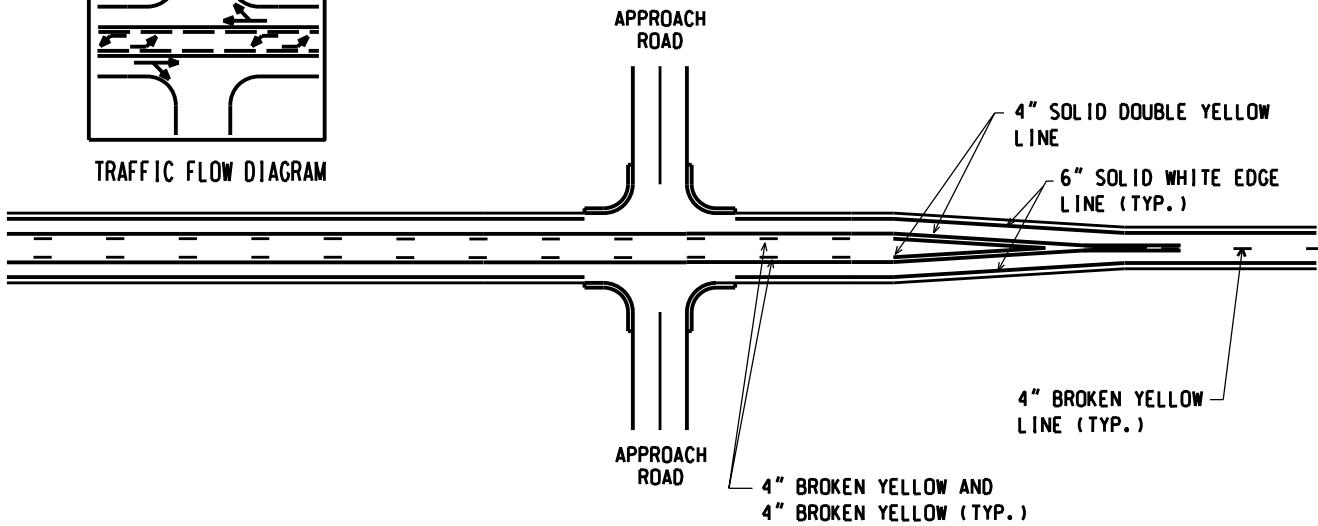
Notes:

1. Arrow markings should be installed according to PAVE-900, PAVE-935 and PAVE-940, if applicable.
2. Where the paved shoulder is 5 ft or greater in width approaching an intersection, radius the edge line to the curb/edge of pavement on both sides of the intersection. For narrower shoulders, the edge line may be simply discontinued across the intersection (blunt ends).

NOT TO SCALE

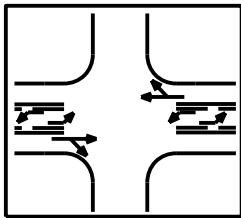


TRAFFIC FLOW DIAGRAM

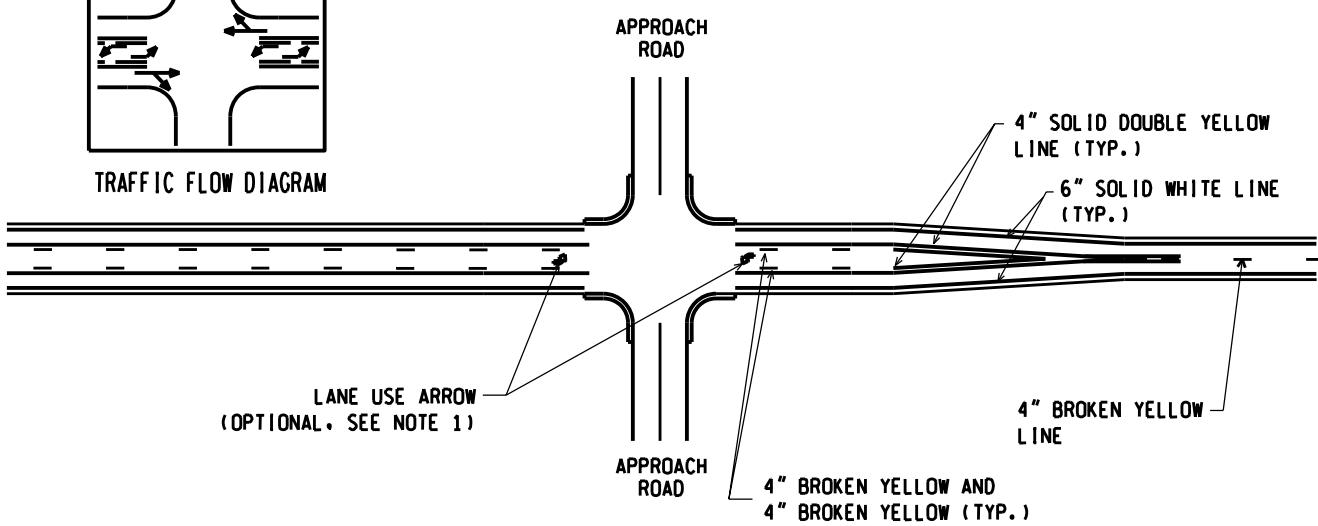


## FULL INTERSECTION PARTIAL FLARE WITH DEVELOPED CENTER LEFT-TURN LANE - CONVENTIONAL MARKINGS

(MINOR CROSS STREET)



TRAFFIC FLOW DIAGRAM



## FULL INTERSECTION PARTIAL FLARE WITH DEVELOPED CENTER LEFT-TURN LANE - ALTERNATE MARKING

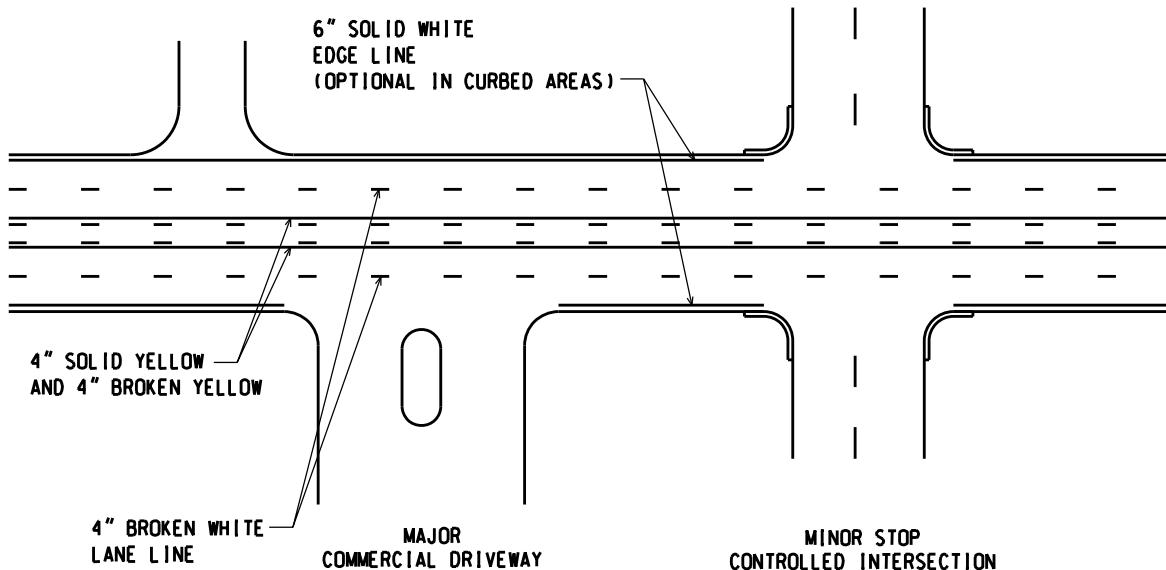
(MINOR CROSS STREET)

Notes:

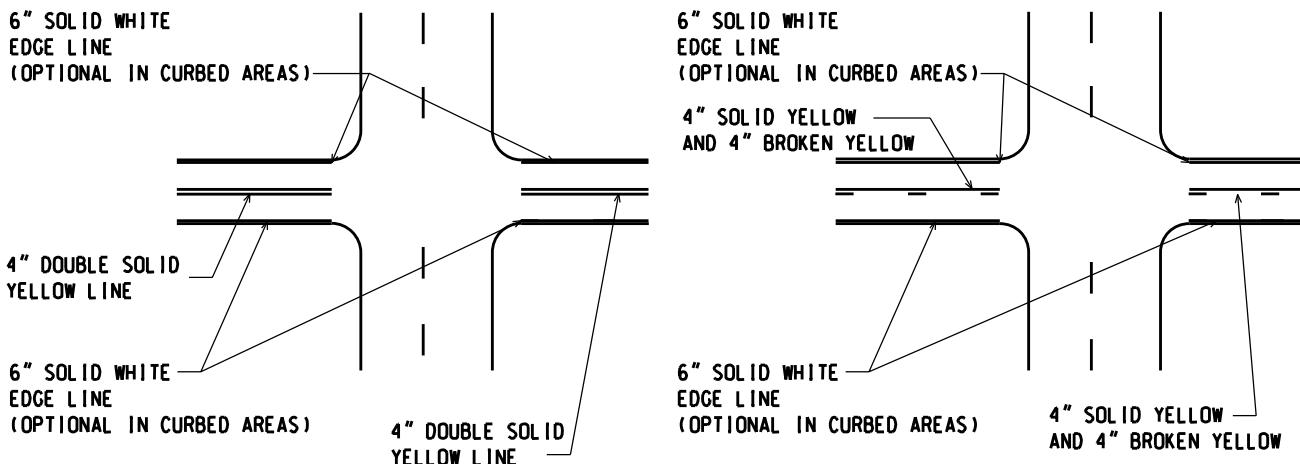
1. Arrow markings should be installed according to PAVE-900, PAVE-935 and PAVE-940, if applicable.
2. Where the paved shoulder is 5 ft or greater in width approaching an intersection, radius the edge line to the curb/edge of pavement on both sides of the intersection. For narrower shoulders, the edge line may be simply discontinued across the intersection (blunt ends).

NOT TO SCALE

RESIDENTIAL  
DRIVEWAYS AND OR  
MINOR COMMERCIAL DRIVEWAY



**STRIPING THROUGH MINOR (STOP CONTROLLED) INTERSECTIONS AND DRIVEWAYS**

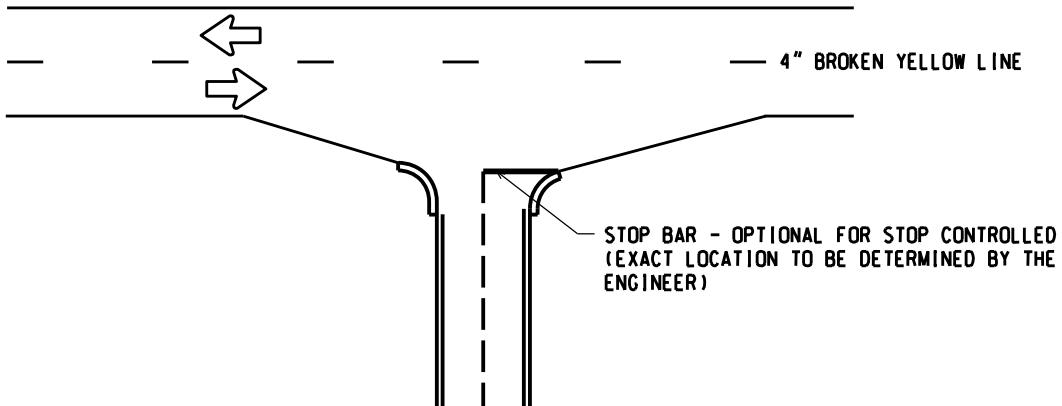


**GAPPING INTERSECTIONS AT MINOR (STOP CONTROLLED) STREETS**

Notes:

1. Where the paved shoulder is 5 ft or greater in width approaching an intersection, radius the edge line to the curb/edge of pavement on both sides of the intersection. For narrower shoulders, the edge line may be simply discontinued across the intersection (blunt ends).

NOT TO SCALE



## STOP BAR DETAIL

(TRUNKLINE TO TRUNKLINE "T" INTERSECTION)

### Notes:

1. The width of stop bars shall be 24 in.
2. Stop bars should be placed between 4 ft and 30 ft from the nearest edge of the intersecting roadway.
3. To minimize vehicle exposure time, stop bars should be located as near the intersecting roadway as practical.

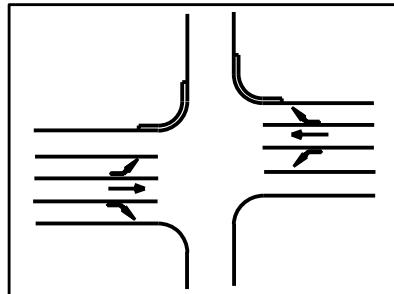
NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION Page 112 of 149 09/21/20  
BUREAU OF DEVELOPMENT STANDARD PLAN F.H.W.A. APPROVAL

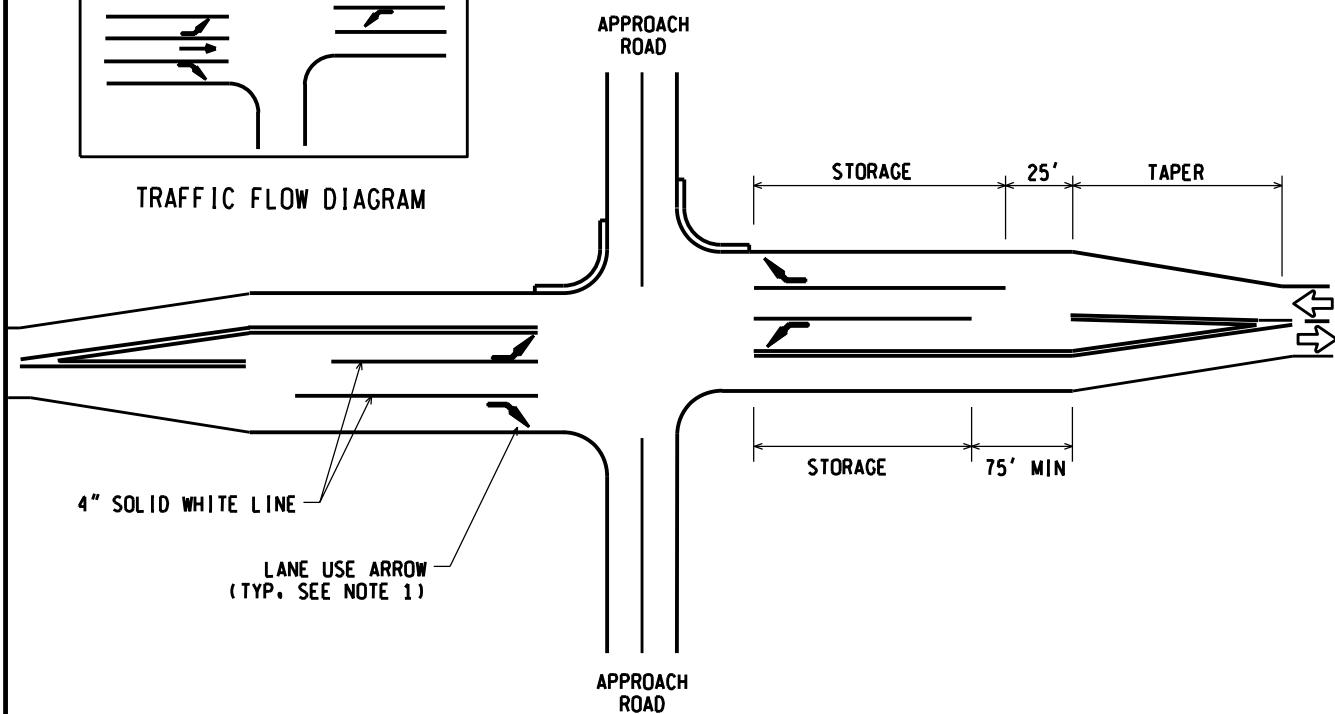
03/25/20  
PLAN DATE

PAVE-930-D

SHEET  
7 OF 8



TRAFFIC FLOW DIAGRAM



## RIGHT AND LEFT TURN LANES ON THE SAME APPROACH

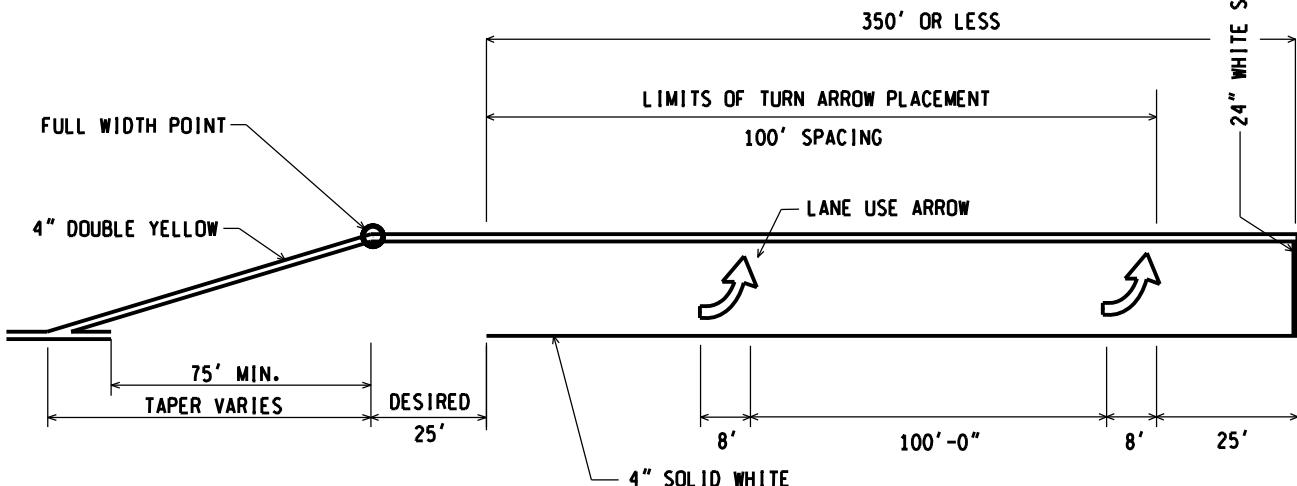
### Note:

1. Arrow markings should be installed according to the layouts shown on PAVE-900, PAVE-935 and PAVE-940, if applicable.
2. Refer to GEO-650 for taper lengths.

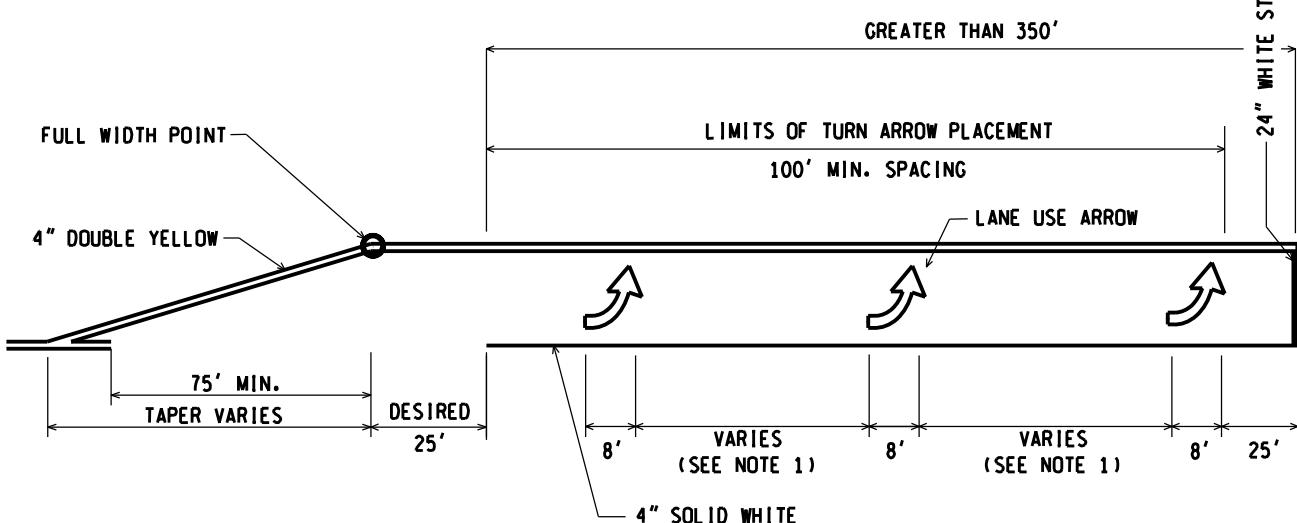
NOT TO SCALE

# LEFT TURN STORAGE LANE(S) MARKING DETAILS

## FOR STOP CONTROLLED OR SIGNALIZED INTERSECTIONS



### LEFT TURN ARROW PLACEMENT FOR STORAGE LENGTHS 350 FT OR LESS



### LEFT TURN ARROW PLACEMENT FOR STORAGE LENGTHS GREATER THAN 350 FT

#### NOTES:

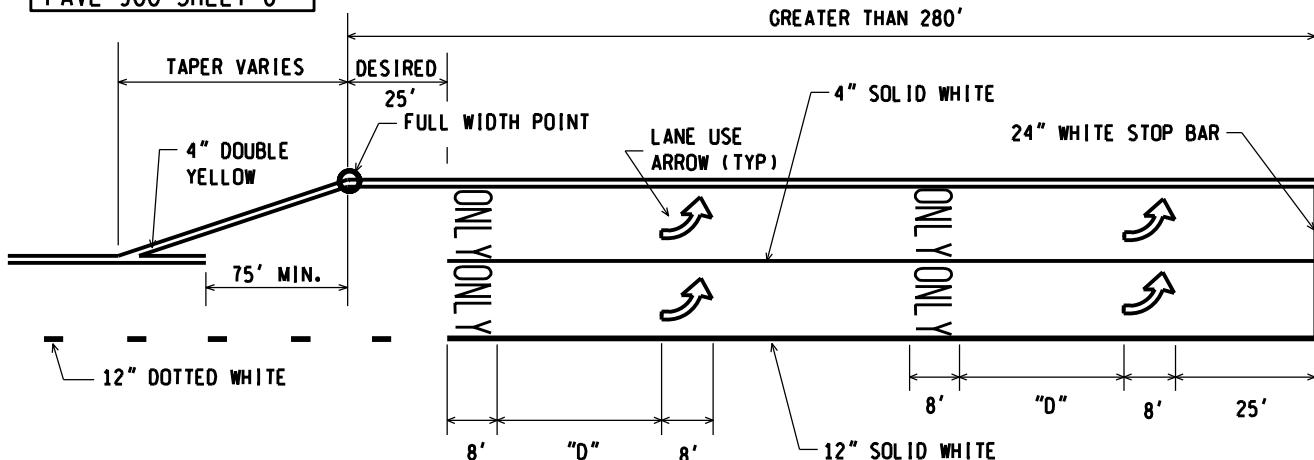
1. Where the storage length is greater than 350 ft, use a minimum of three arrows. Place additional arrows as directed by the Engineer. Arrows should be evenly spaced throughout the available length with a minimum spacing of 100 ft.
2. Arrows shall be used in exclusive turn lanes at signalized intersections. When used, they shall be located as shown.
3. A 4 inch yellow left turn edge line may be used adjacent to raised curbs or medians in a left turn lane.

 <p><b>PREPARED BY</b> TSMD DIVISION</p>	<p>DEPARTMENT DIRECTOR Paul C. Ajegba</p> <p>APPROVED BY: <u>                  </u> Gregg Brunner, P.E. Gregg Brunner Nov 2 2020 12:09 PM</p> <p>APPROVED BY: <u>                  </u> DIRECTOR, BUREAU OF FIELD SERVICES</p>	<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR</p> <p><b>LEFT TURN LANE MARKINGS</b></p>
	<p>APPROVED BY: <u>                  </u> Bradley C. Wieferich Bradley C. Wieferich Nov 5 2020 5:49 AM</p> <p>APPROVED BY: <u>                  </u> Page 114 of 14909/21/20 DIRECTOR, BUREAU OF DEVELOPMENT</p>	<p>14909/21/20 F.H.W.A. APPROVAL</p> <p>03/25/20 PLAN DATE</p> <p>PAVE-935-E SHEET 1 OF 6</p>

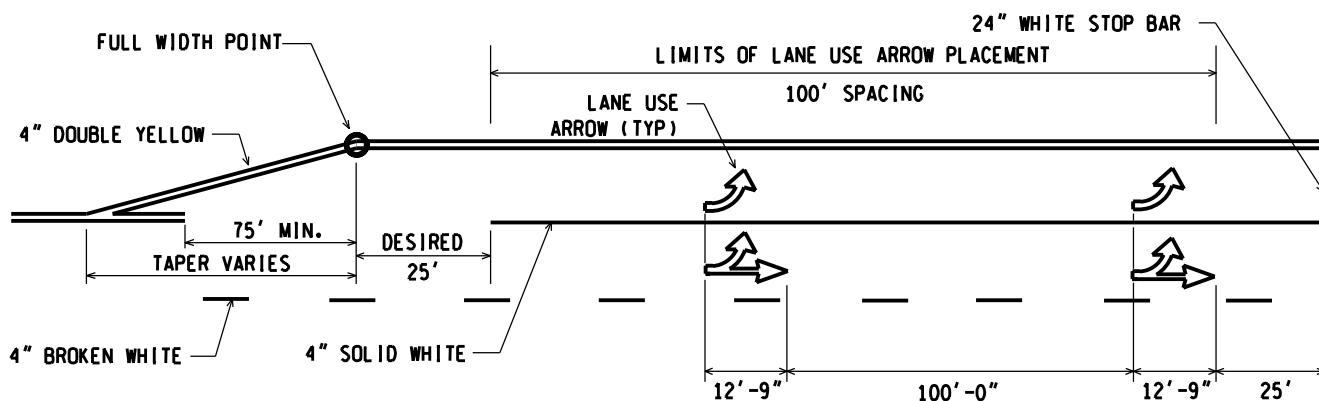
# DOUBLE LEFT TURN STORAGE LANES MARKING DETAILS

FOR "D" VALUES SEE  
PAVE-900 SHEET 8

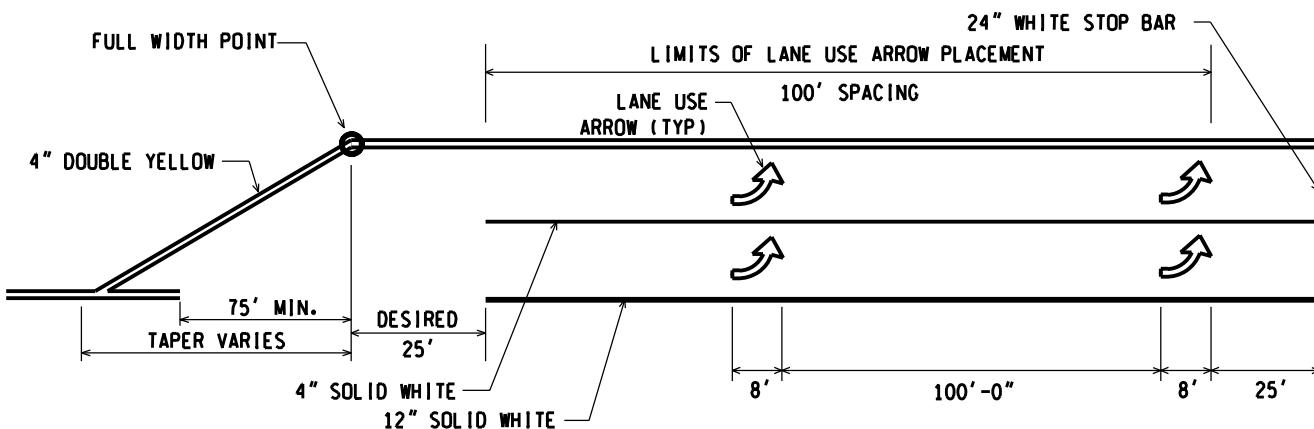
## FOR STOP CONTROLLED OR SIGNALIZED INTERSECTIONS



## THROUGH LANE BECOMES EXCLUSIVE LEFT TURN LANE



## THROUGH LANE BECOMES OPTIONAL LEFT TURN LANE



## DUAL DEVELOPED LEFT TURN LANES

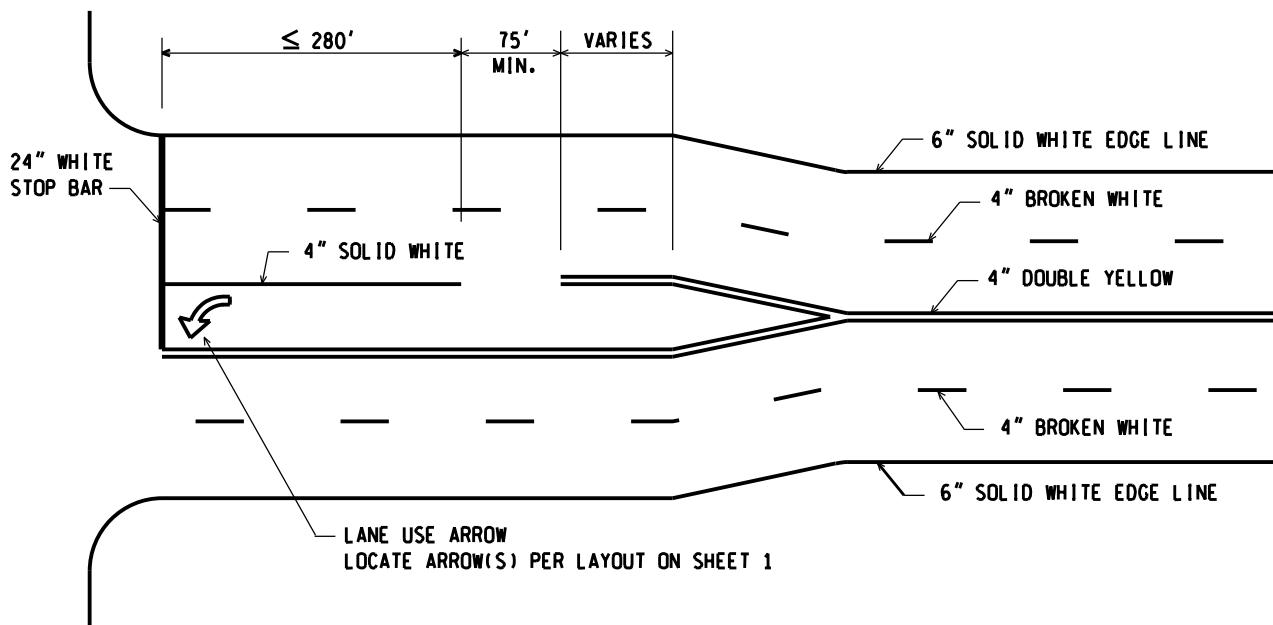
### NOTES:

1. Where at least one through lane becomes an exclusive turn lane, arrow and legend markings shall be used. Otherwise, omit the legend markings.
2. For double left turn lanes 280 ft or less, omit the second set of arrow-legend pairs and/or combination arrows in each lane.
3. When two or more arrow/legend sets are used and spacing between sets is less than "D", the Engineer may choose to reduce the distance between the arrow and legend.
4. Include a dotted turning guideline for all double turn movements.

NOT TO SCALE

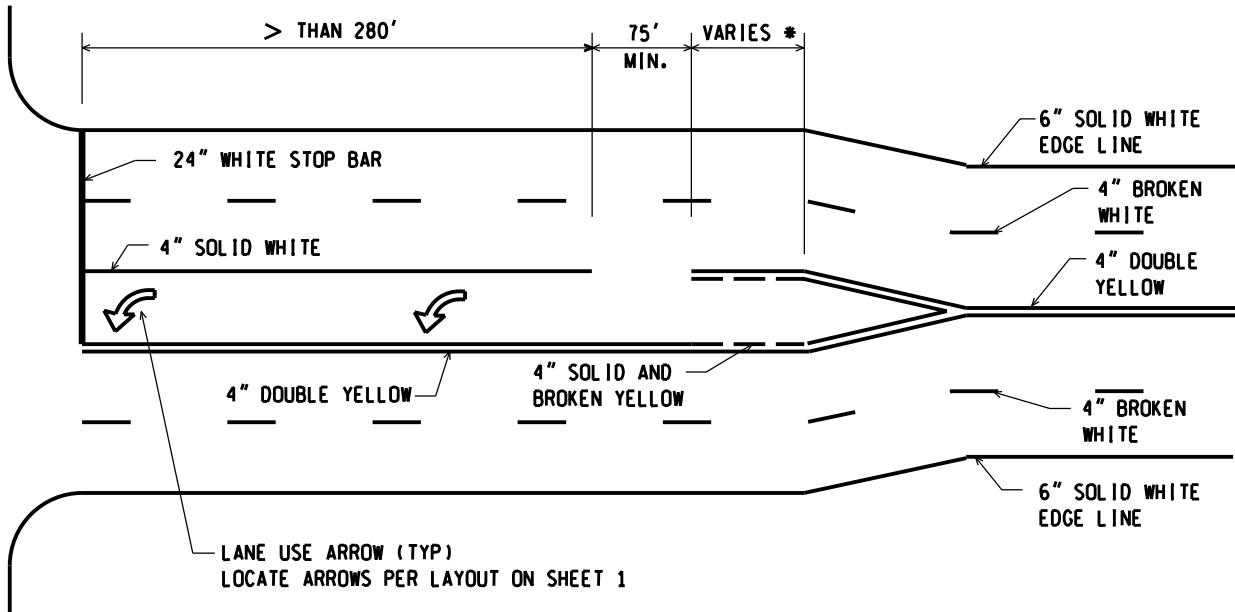
# LIMITED LENGTH LEFT TURN LANES

## FOR SIGNALIZED INTERSECTIONS



## 355 FT OR LESS OF FULL WIDTH CENTER LANE FOR LEFT TURNS

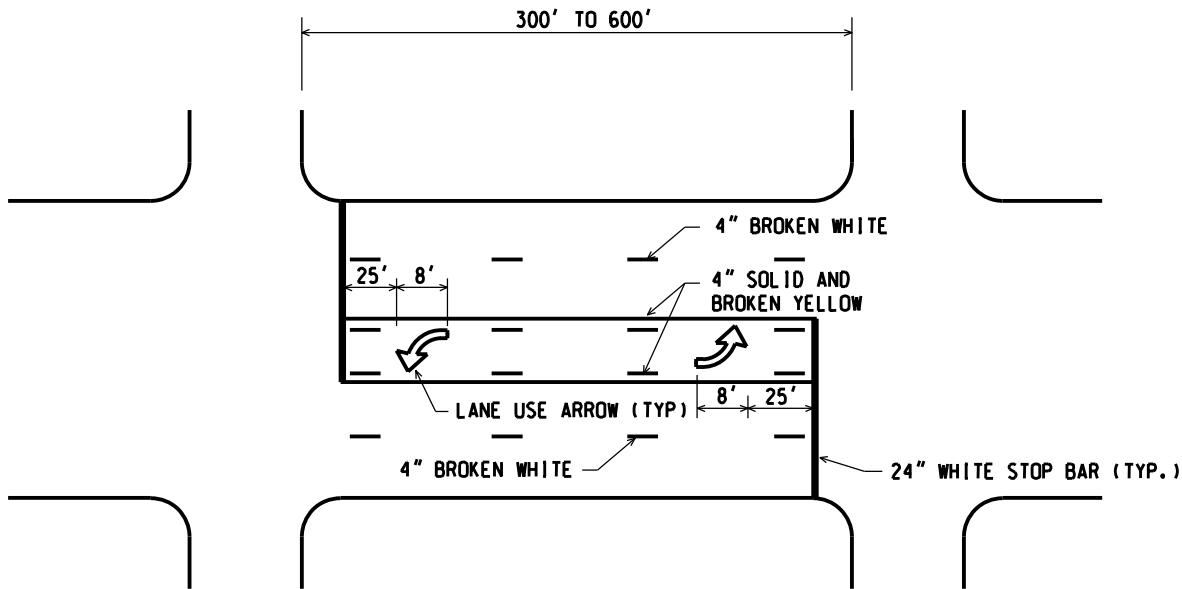
\* REMAINDER OF 5 LANE SECTION TO BE MARKED AS A BI-DIRECTIONAL LEFT TURN LANE (SEE SHEET 5)



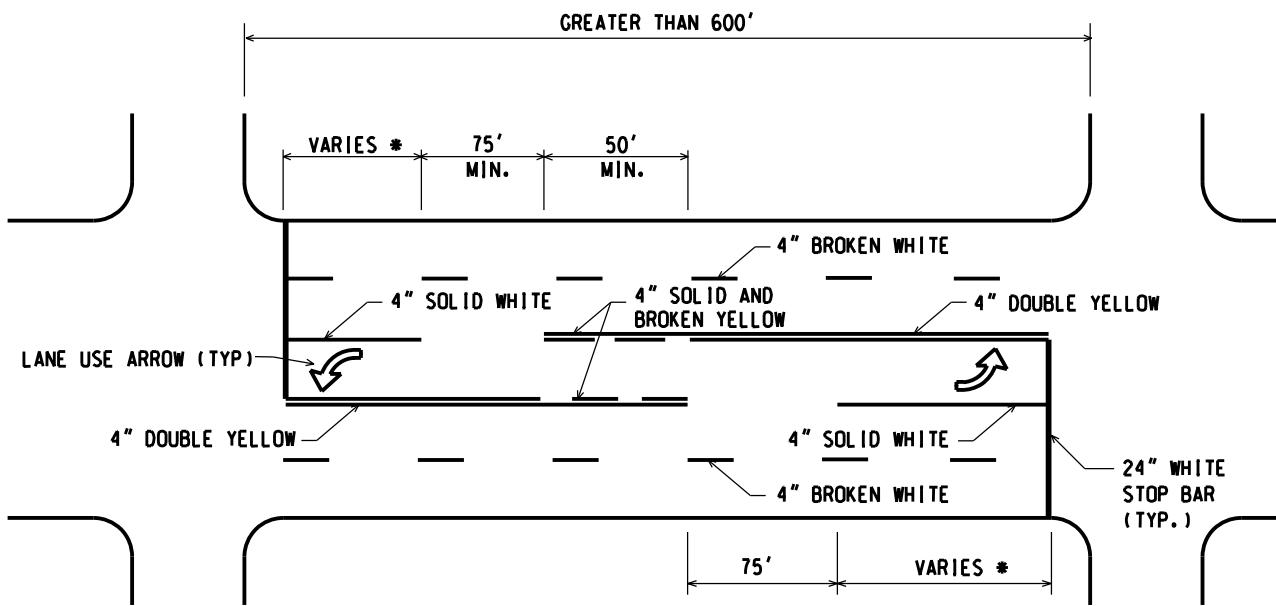
## FOR FULL WIDTH CENTER LEFT TURN LANES GREATER THAN 355 FT

NOT TO SCALE

## LEFT TURN LANE TREATMENTS BETWEEN URBAN SIGNALIZED INTERSECTIONS



### WHERE DISTANCE BETWEEN ADJACENT INTERSECTIONS IS 600 FT OR LESS

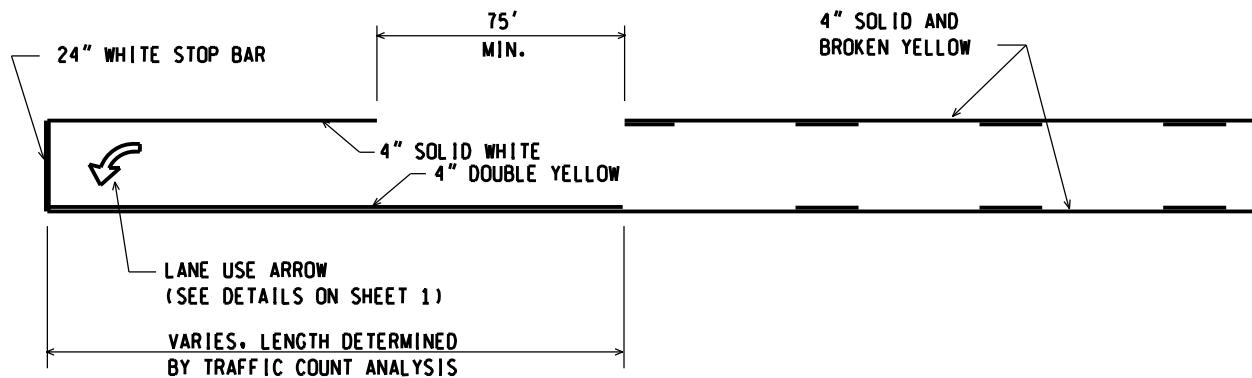


### WHERE DISTANCE BETWEEN ADJACENT INTERSECTIONS IS GREATER THAN 600 FT

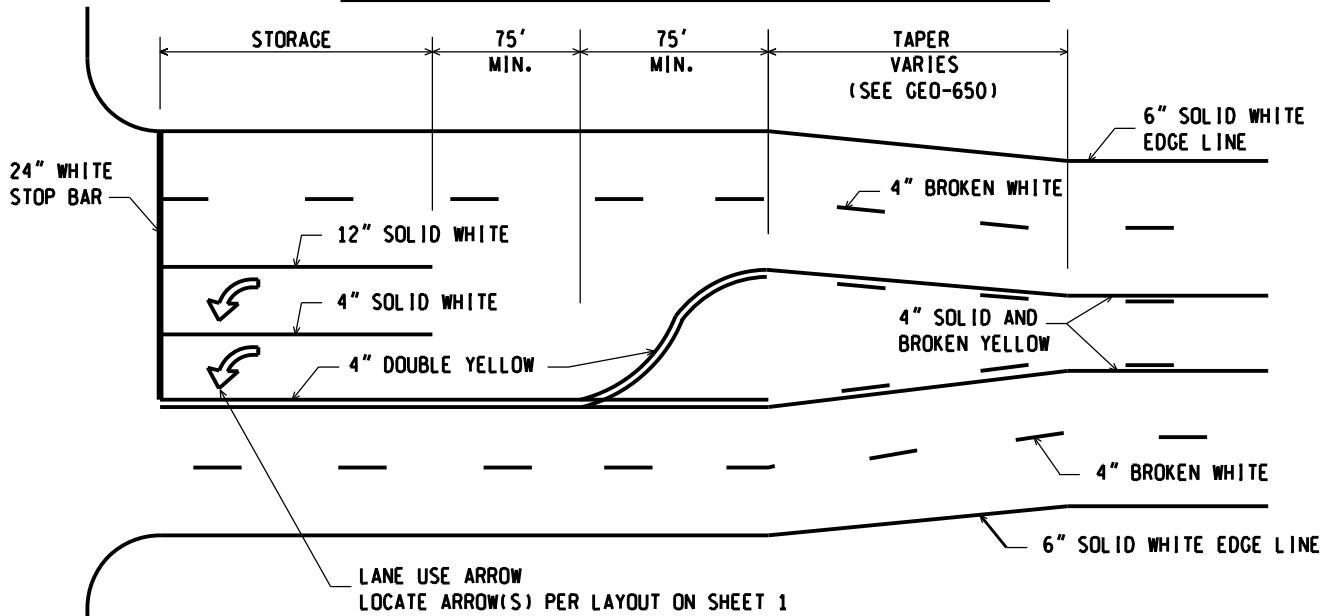
\* LENGTH DETERMINED BY TRAFFIC COUNT ANALYSIS

NOT TO SCALE

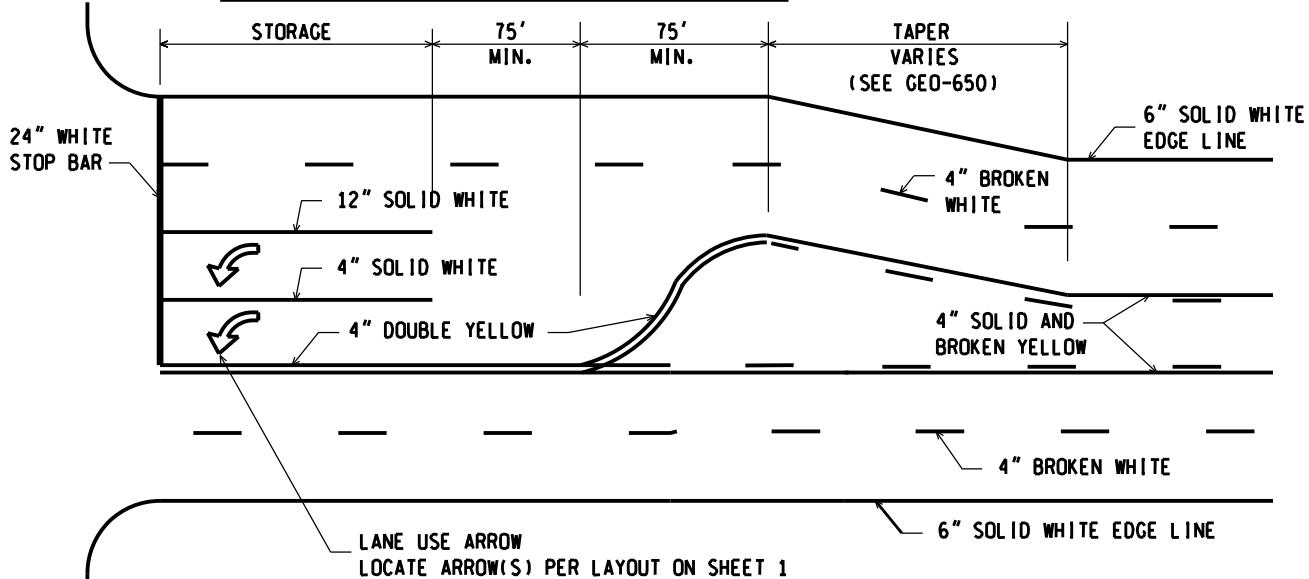
## TWO-WAY LEFT-TURN LANE MARKINGS



## SINGLE-DIRECTION LEFT TURN CHANNELIZATION



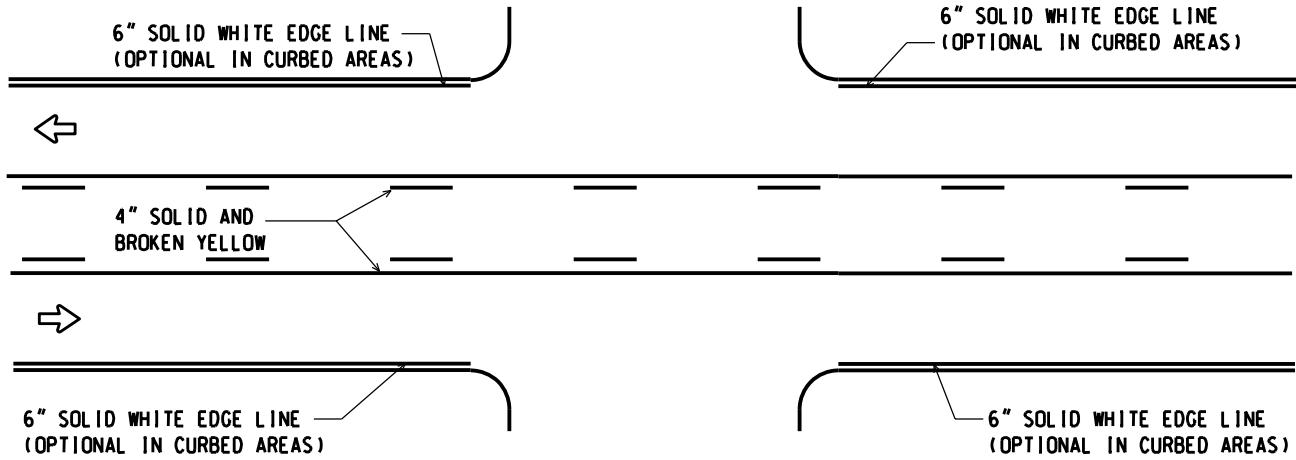
## SINGLE-DIRECTION LEFT TURN CHANNELIZATION FOR DUAL TURNS (PAVEMENT WIDENING ON BOTH SIDES)



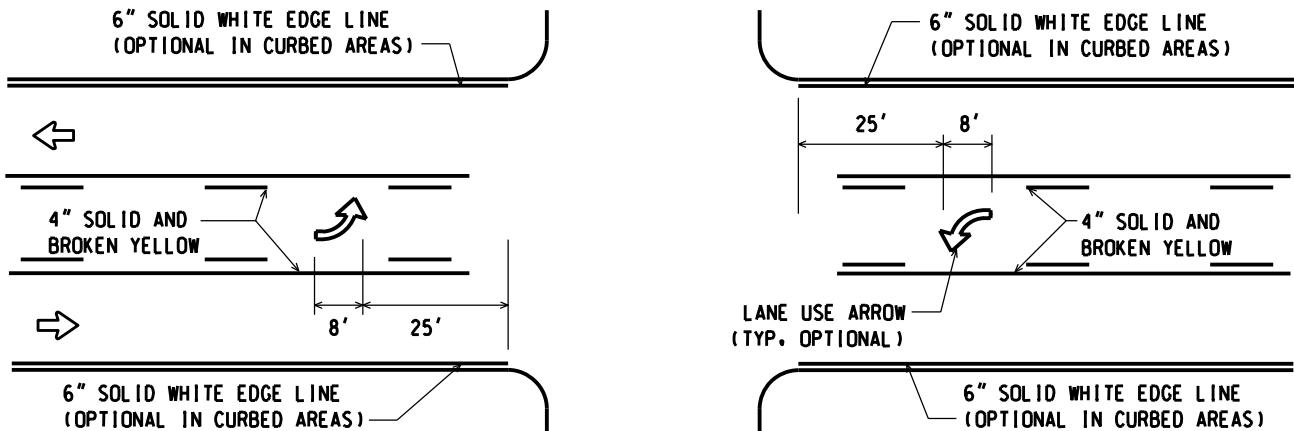
## SINGLE-DIRECTION LEFT TURN CHANNELIZATION FOR DUAL TURNS (PAVEMENT WIDENING ON ONE SIDE)

NOT TO SCALE

## TWO-WAY LEFT-TURN LANE MARKINGS

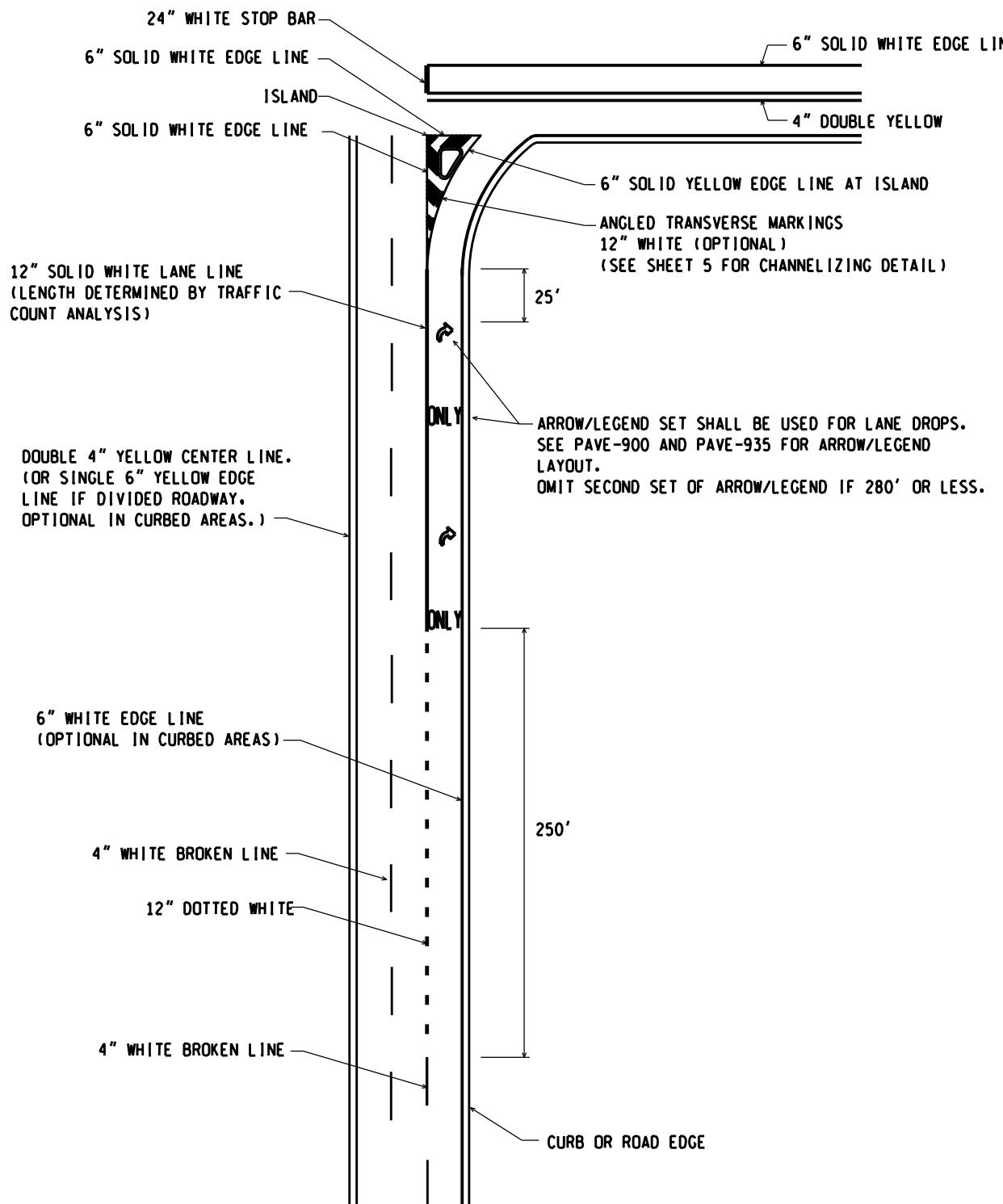


## CONVENTIONAL MARKINGS AT STOP CONTROLLED INTERSECTIONS



## ALTERNATE MARKINGS AT STOP CONTROLLED INTERSECTIONS

NOT TO SCALE



## RIGHT TURN LANE DROP AND ISLAND DETAILS

(ALSO APPLIES TO ONE WAY LEFT TURN LANE DROPS)

<b>MDOT</b> Michigan Department of Transportation
PREPARED BY TSMO DIVISION
DRAWN BY: <u>LME</u>
CHECKED BY: <u>JGM</u>

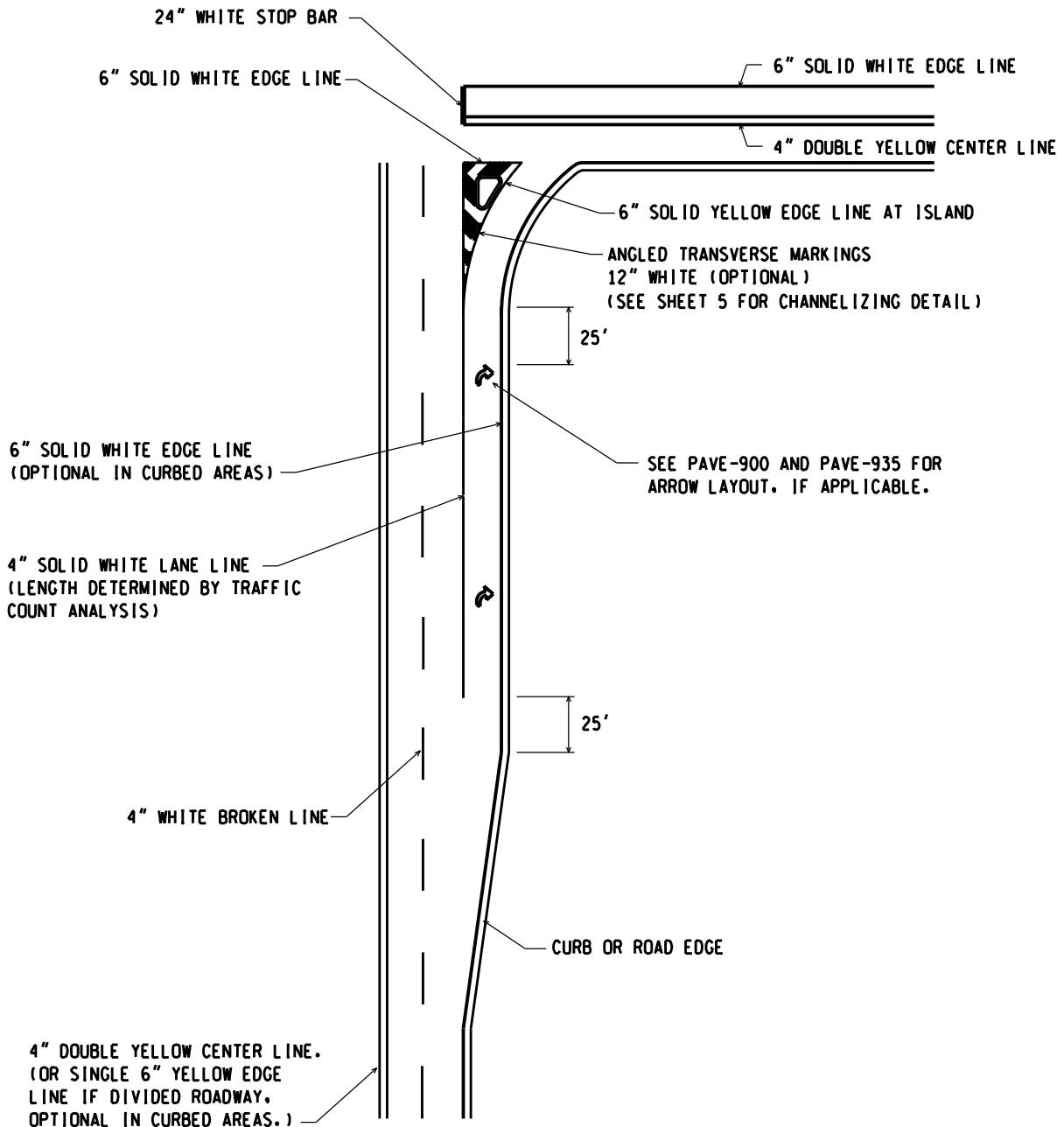
DEPARTMENT DIRECTOR Paul C. Ajegba
APPROVED BY: <u>Gregg Brunner, P.E.</u> Gregg Brunner Nov 2 2020 12:09 PM
DIRECTOR, BUREAU OF FIELD SERVICES
APPROVED BY: <u>Bradley C. Wieferich</u> Bradley C. Wieferich Nov 5 2020 5:50 AM

Page 120 of

MICHIGAN DEPARTMENT OF TRANSPORTATION  
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

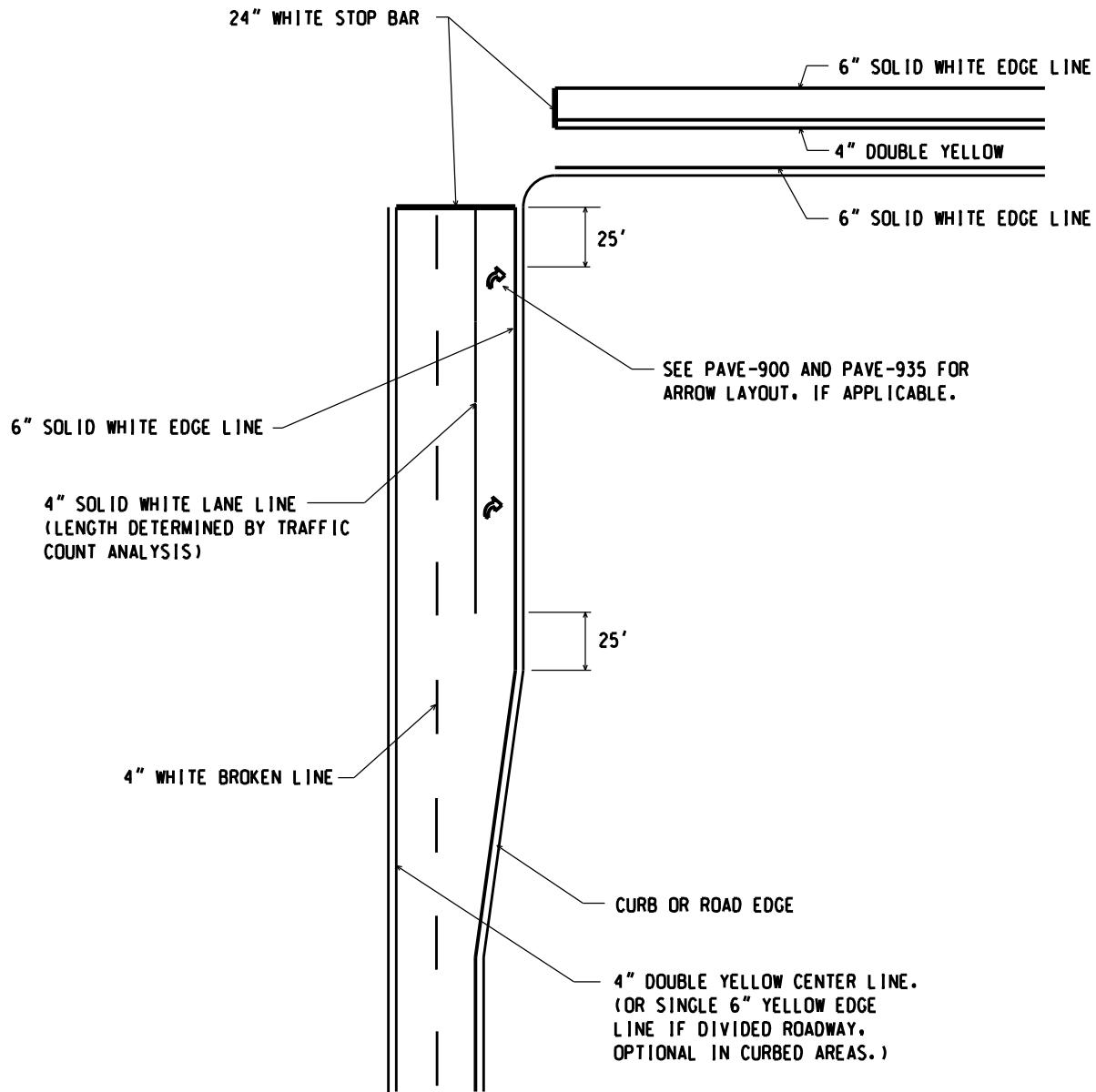
## RIGHT TURN LANE AND ISLAND PAVEMENT MARKING

14909/21/20	03/25/20	PAVE-940-D	SHEET 1 OF 6
F.H.W.A. APPROVAL	PLAN DATE		



## RIGHT TURN LANE WITH CHANNELIZING ISLAND

NOT TO SCALE



## DEVELOPED RIGHT TURN LANE

NOT TO SCALE

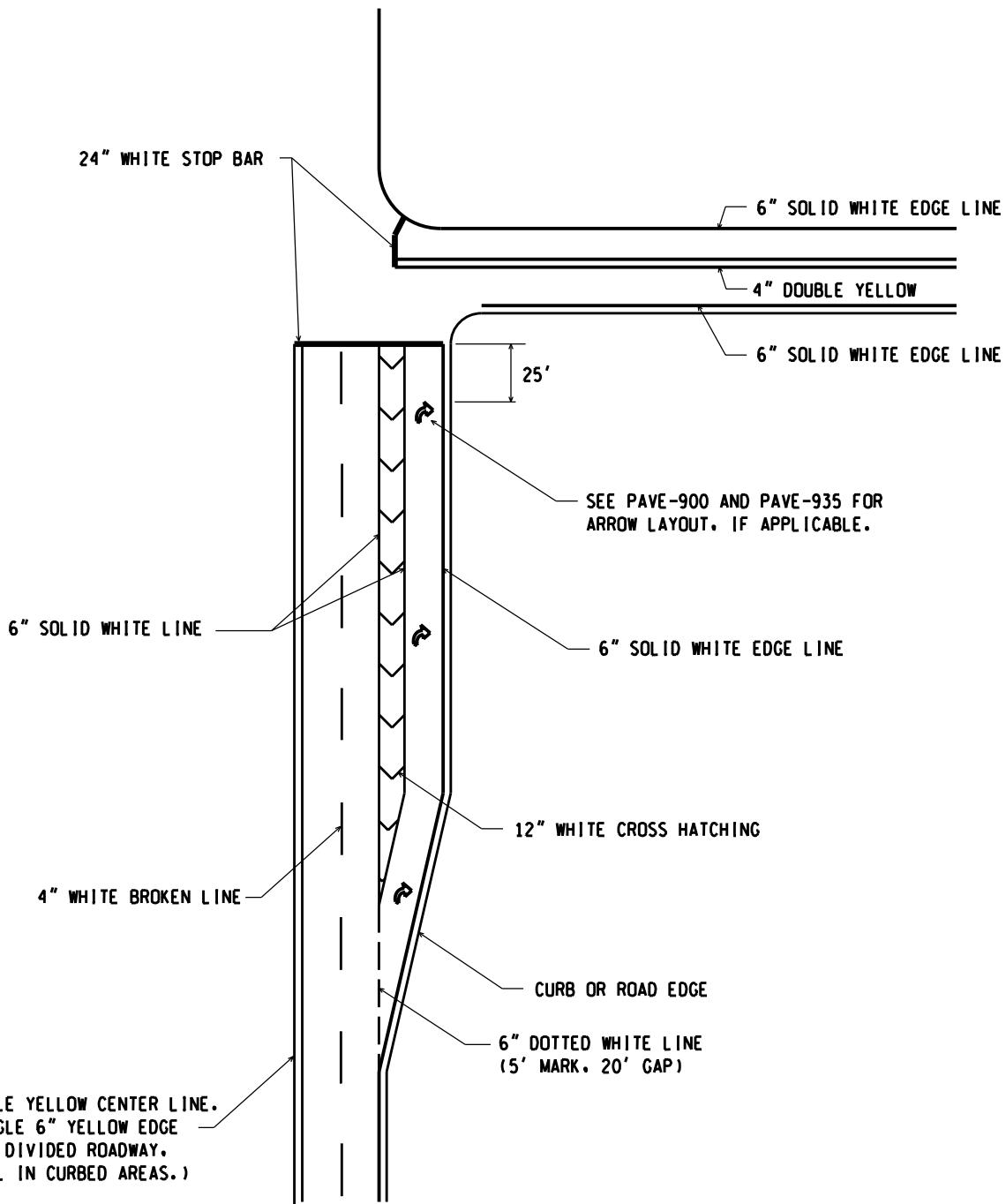
MICHIGAN DEPARTMENT OF TRANSPORTATION Page 122 of 14909/21/20  
BUREAU OF DEVELOPMENT STANDARD PLAN

F.H.W.A. APPROVAL

03/25/20  
PLAN DATE

PAVE-940-D

SHEET 3 OF 6

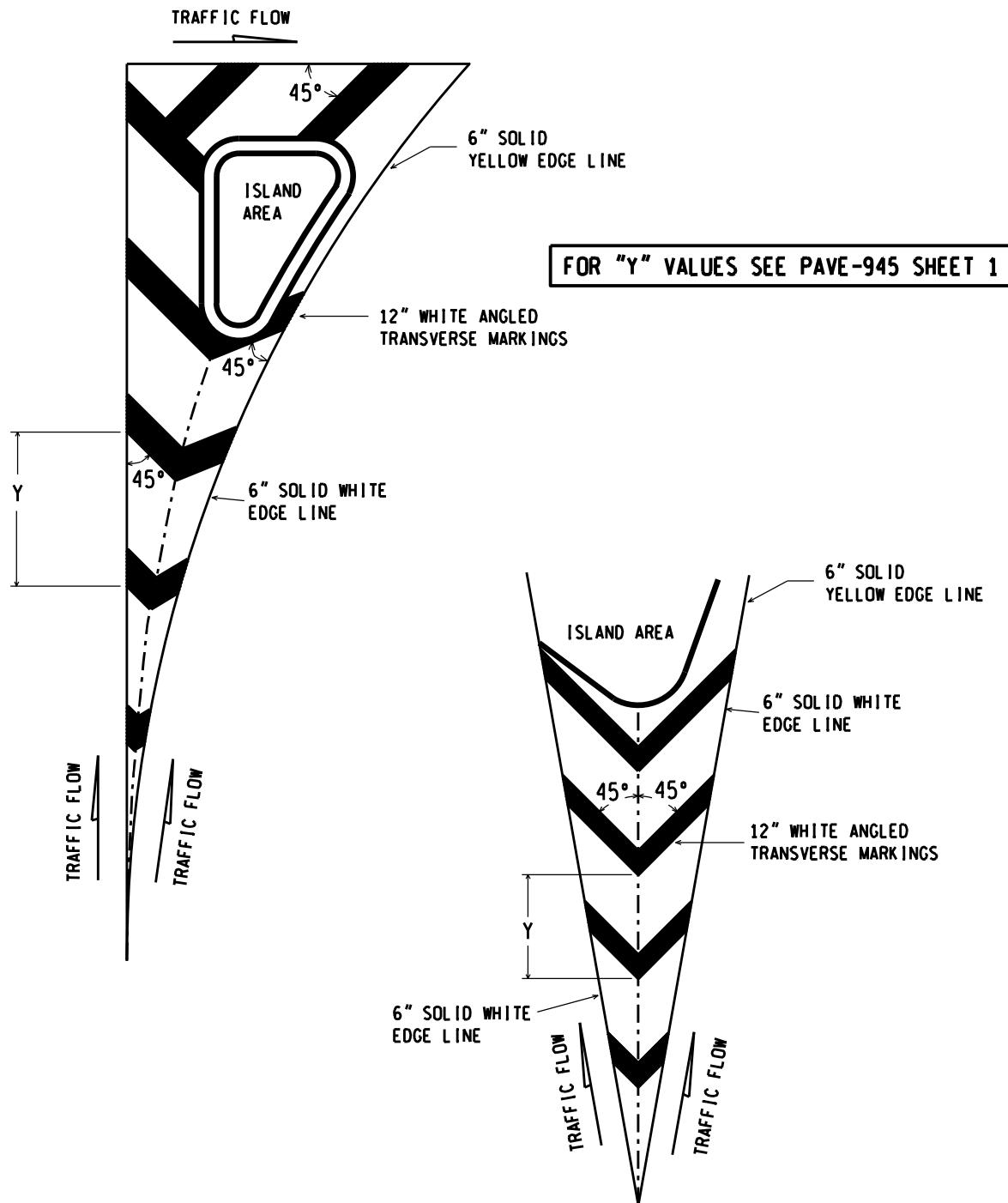


## OFFSET RIGHT TURN LANE

### NOTE:

1. See Sheet 5 of 6 and PAVE-945 for transverse marking details.

NOT TO SCALE



## CHANNELIZING ISLANDS

(TRAFFIC FLOWS IN SAME DIRECTION)

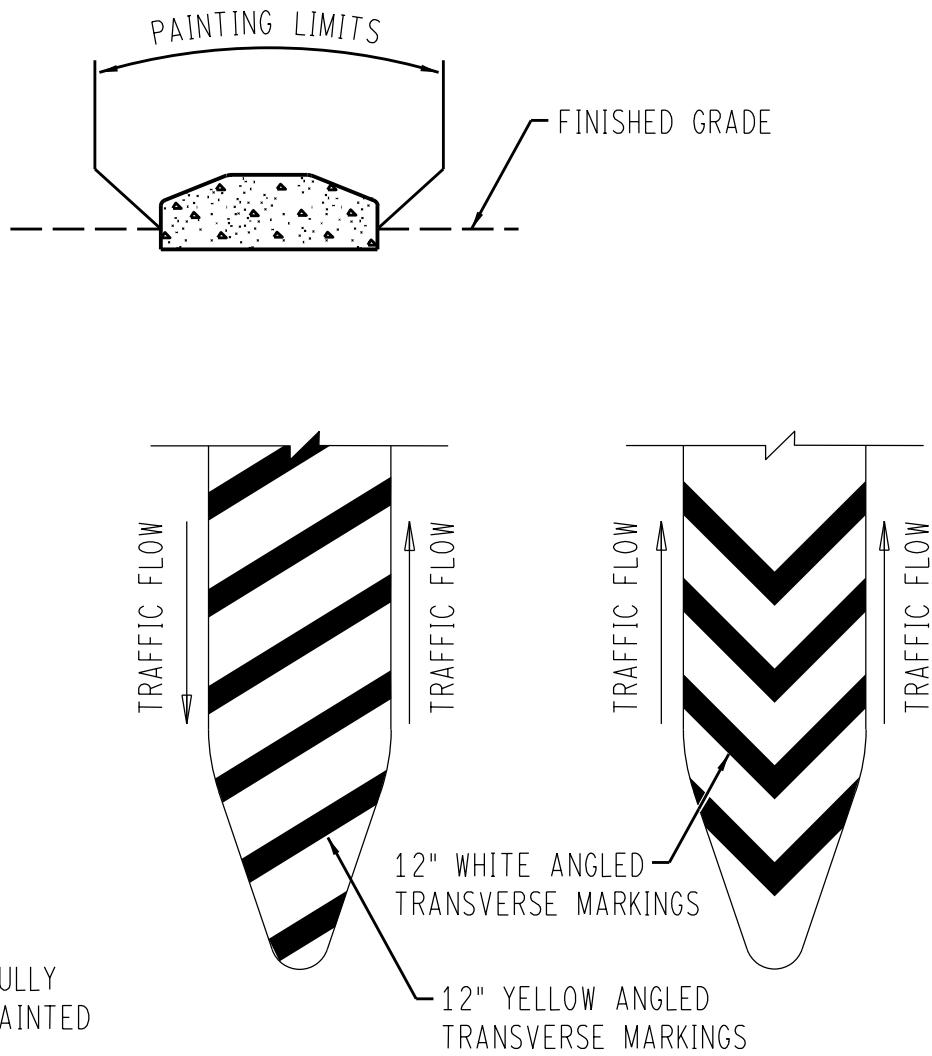
NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION Page 124 of 14909/21/20  
BUREAU OF DEVELOPMENT STANDARD PLAN

03/25/20  
F.H.W.A. APPROVAL  
PLAN DATE

PAVE-940-D

SHEET 5 OF 6



OPTION A

OPTION B

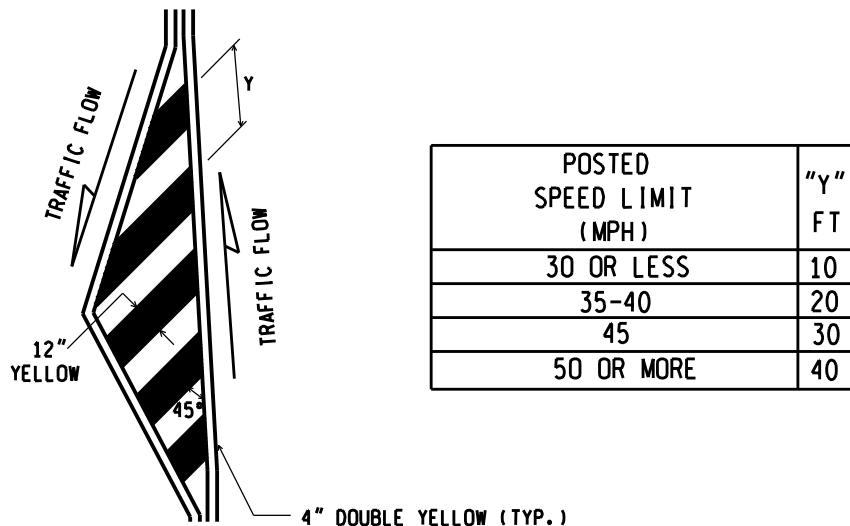
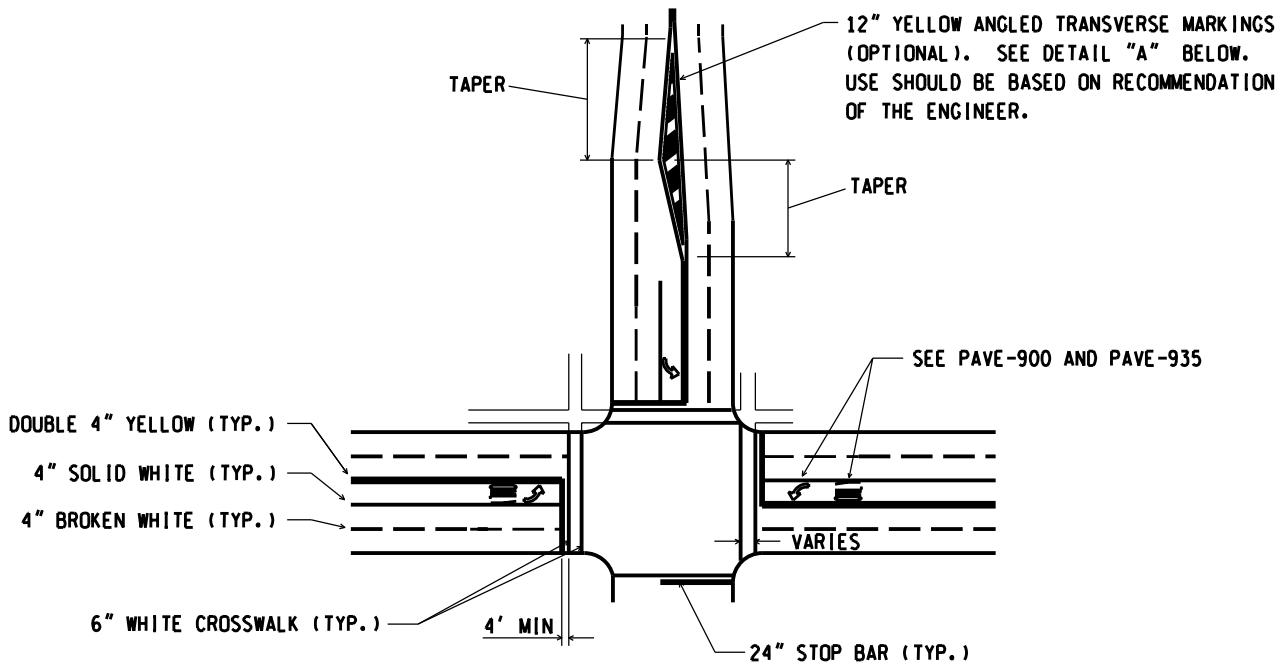
OPTION C

## RAISED CHANNELIZING ISLAND PAINTING

**NOTE:**

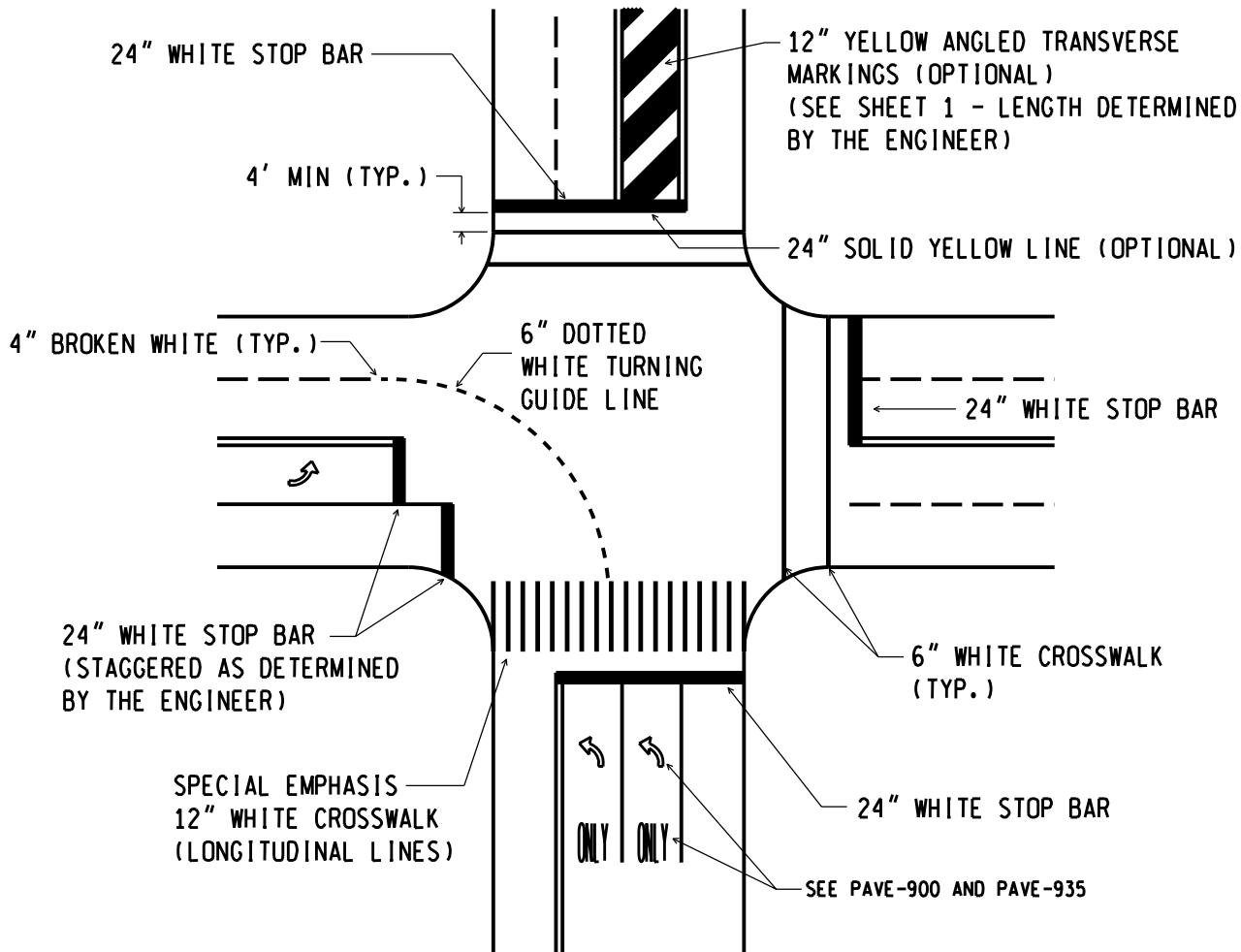
1. See Sheet 5 of 6 and PAVE-945 for transverse marking details.

NOT TO SCALE



## DETAIL "A" ANGLED TRANSVERSE MARKING

 <p><b>PREPARED BY</b> TSMD DIVISION</p>	<p>DEPARTMENT DIRECTOR Paul C. Ajegba</p> <p>APPROVED BY: <u>Gregg Brunner, P.E.</u> Gregg Brunner Nov 2 2020 12:09 PM DIRECTOR, BUREAU OF FIELD SERVICES</p> <p>APPROVED BY: <u>Bradley C. Wieferich</u> Bradley C. Wieferich Nov 5 2020 5:50 AM DIRECTOR, BUREAU OF DEVELOPMENT</p>	<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR</p> <p><b>INTERSECTION, STOP BAR &amp; CROSSWALK MARKINGS</b></p>		
		14909/21/20	03/25/20	PAVE-945-D
DRAWN BY: <u>LME</u>	Page 126 of	F.H.W.A. APPROVAL	PLAN DATE	SHEET 1 OF 3
CHECKED BY: <u>JGM</u>				

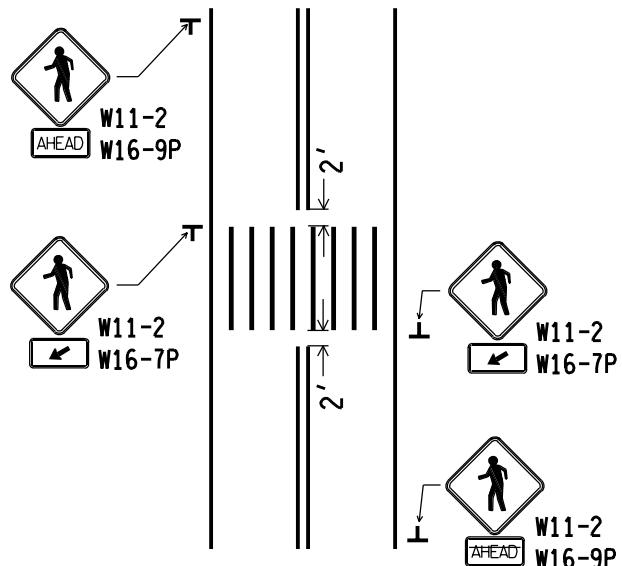


## SIGNALIZED OR STOP SIGN CONTROLLED INTERSECTION

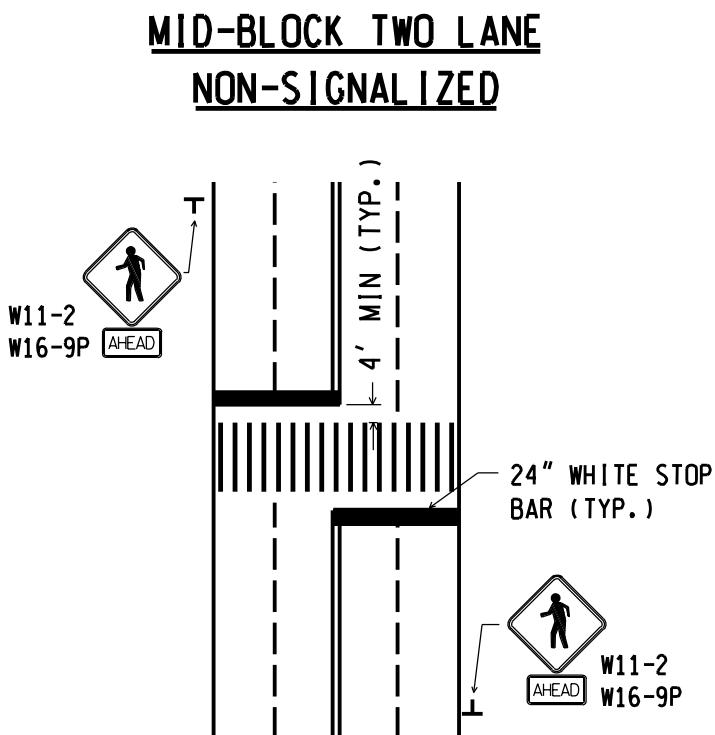
### NOTES:

1. Stop Bars should be located 40-150 ft from the signal head. Optional stop bars, if used at stop controlled intersections, should be 4-30 ft from the edge of the intersecting roadway. Exact location to be determined by the Engineer.
2. Standard crosswalk is two 6 inch white transverse lines. Special emphasis crosswalk is 12 inch white longitudinal lines.
3. Install special emphasis crosswalks at mid-block crossings, established school crossings (as defined by the MMUTCD), where crossing uncontrolled traffic at an intersection or ramp, or when directed by the Engineer. See Sheet 3 for detail of special emphasis crosswalk markings.
4. Width of crosswalk should equal width of the adjacent sidewalk, but shall not be less than 6 ft (measured inside the lines).
5. When practical, crosswalk location should avoid conflict with drainage inlets.
6. Turning guide lines should be placed to direct the driver into the closest through lane. Include a dotted turning guide line for all double turn movements.

NOT TO SCALE

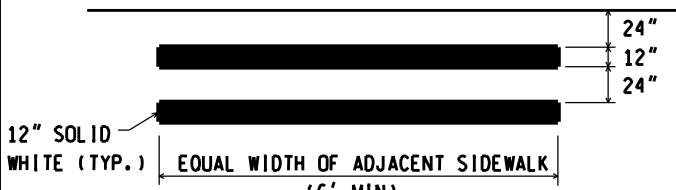


## MID-BLOCK MULTI-LANE NON-SIGNALIZED



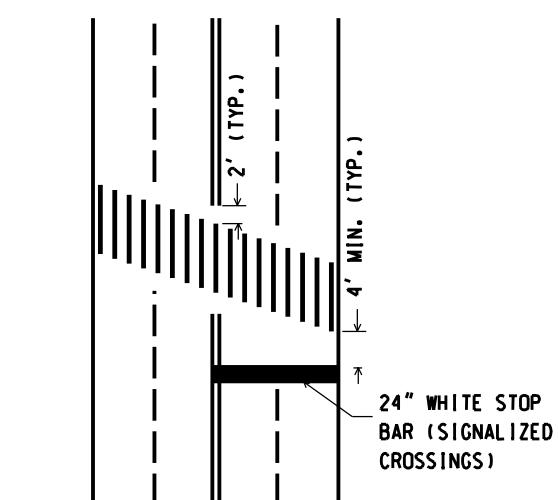
## MID-BLOCK MULTI-LANE SIGNALIZED

### ACCESSIBLE RAMP



## DETAIL OF SPECIAL EMPHASIS CROSSWALK MARKING

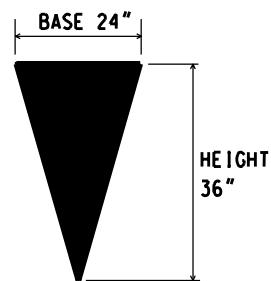
NOT TO SCALE



## SKEWED CROSSINGS

### NOTES:

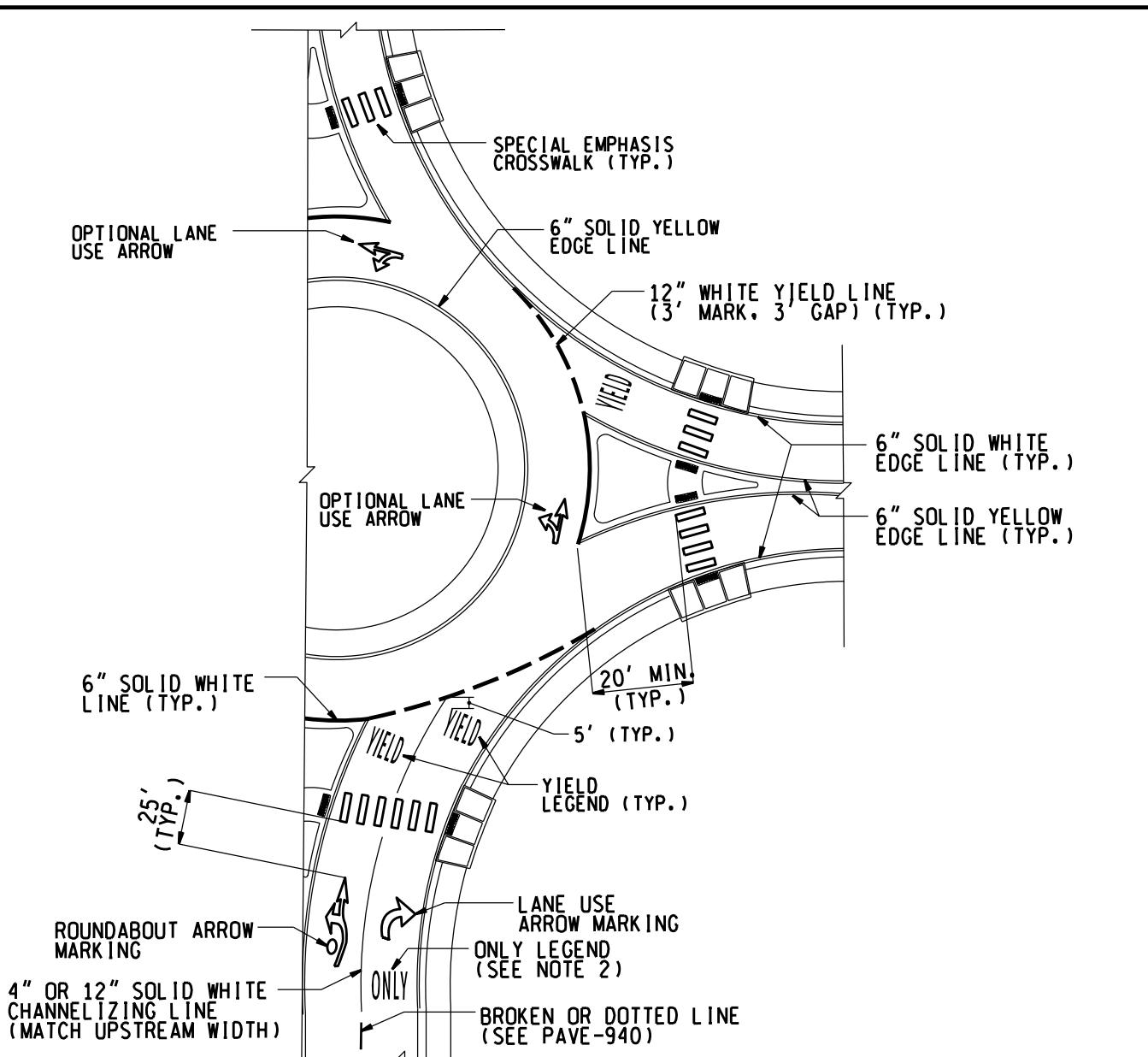
1. Install special emphasis crosswalk markings parallel to traffic flow.



## DETAIL OF YIELD TRIANGLE FOR YIELD LINE

### NOTES:

1. Install four triangles per lane.
2. Adjust spacing (between 3 to 12 inches) as necessary.



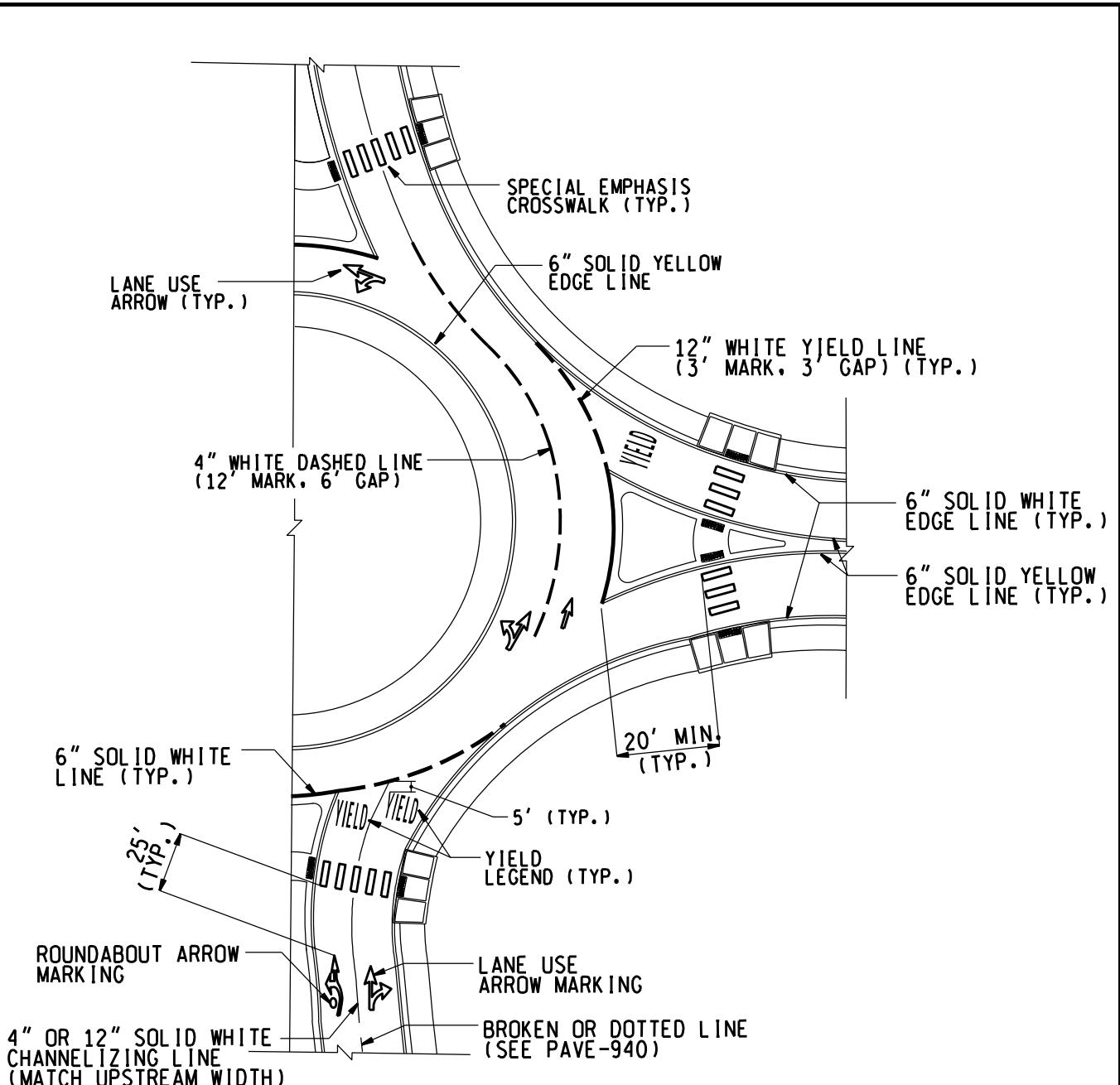
## ONE-LANE ROUNABOUT

### NOTES:

1. Lane use arrows shall be placed on approaches with more than one lane. Use roundabout (fishhook style) arrows for approach arrows that include a left turn movement, and standard arrows for all other applications. See Sheet 3 for roundabout arrow details.
2. Use ONLY legend when the right turn lane becomes a mandatory turn lane; omit for developed lanes. See PAVE-900 for layout.
3. If there is no crosswalk on a multilane approach, place the lane use arrows 25' in advance of the yield line (or, if present, the yield legend).
4. If the channelizing (solid) lane line extends beyond the first lane use arrows, install additional sets of arrows/legends in accordance with PAVE-935.

NOT TO SCALE

 <p>PREPARED BY TSMO DIVISION</p>	<p>DEPARTMENT DIRECTOR Paul C. Ajegba</p> <p>APPROVED BY: <u>Gregg Brunner, P.E.</u> Gregg Brunner Nov 2 2020 12:09 PM DIRECTOR, BUREAU OF FIELD SERVICES</p>	<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR</p> <p><b>ROUNABOUT MARKINGS</b></p>
	<p>APPROVED BY: <u>Bradley C. Wieferich</u> Bradley C. Wieferich Nov 5 2020 5:51 AM DIRECTOR, BUREAU OF DEVELOPMENT</p>	<p>Page 129 of 14909/21/20 F.H.W.A. APPROVAL 04/30/20 PLAN DATE <b>PAVE-951-C</b> SHEET 1 OF 3</p>



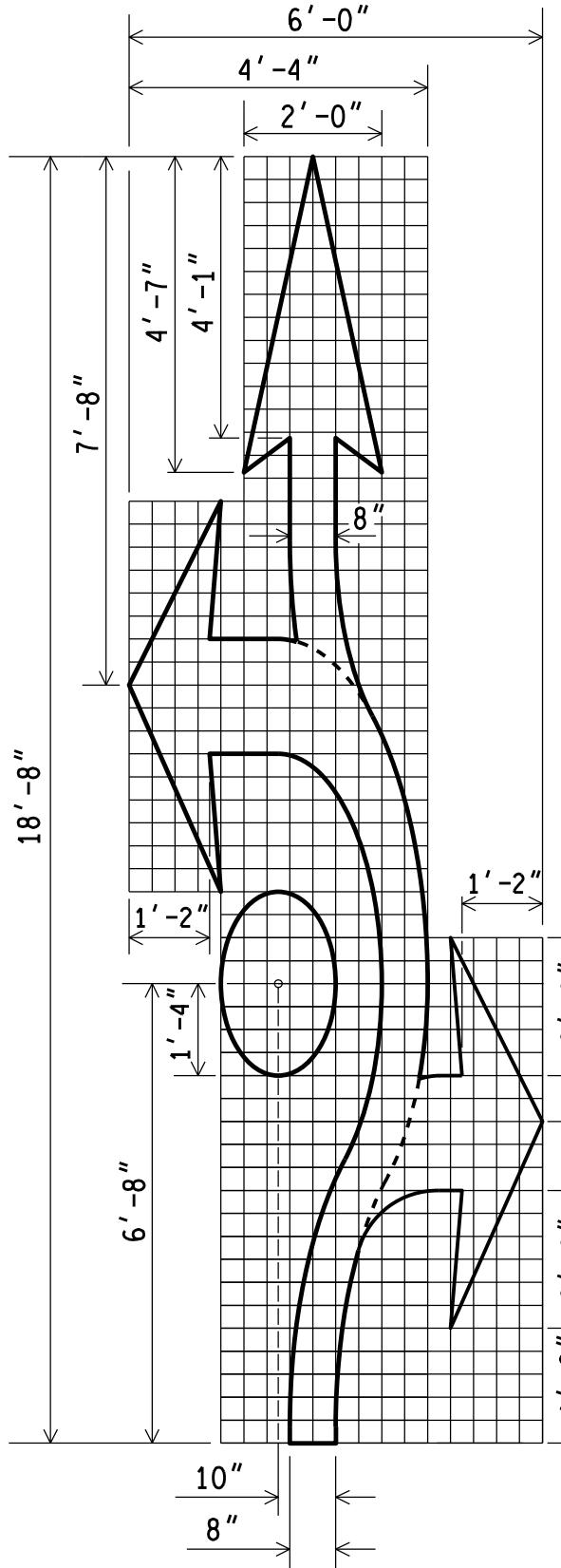
## TWO-LANE ROUNDABOUT

### NOTES:

1. Lane use arrows shall be placed on approaches with more than one lane. Use roundabout (fishhook style) arrows for approach arrows that include a left turn movement, and standard arrows for all other applications. See Sheet 3 for roundabout arrow details.
2. If there is no crosswalk on a multilane approach, place the lane use arrows 25' in advance of the yield line (or, if present, the yield legend).
3. If the channelizing (solid) lane line extends beyond the first lane use arrows, install additional sets of arrows/legends in accordance with PAVE-935.

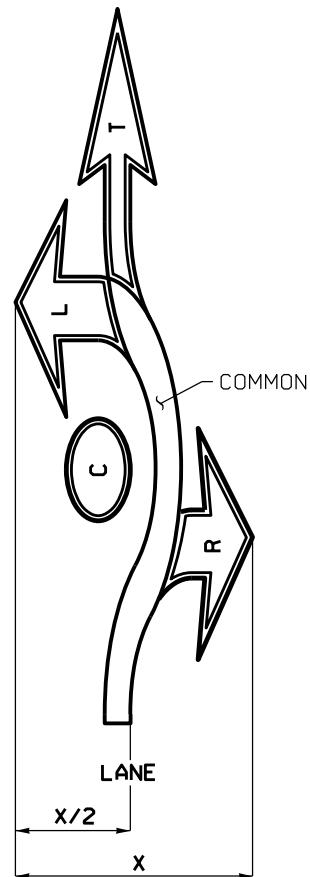
NOT TO SCALE

NOTE: Templates for liquid applied materials on this sheet do not allow gaps.



Grid = 4"

## ROUNABOUT ARROW DETAILS



COMPONENT KEY

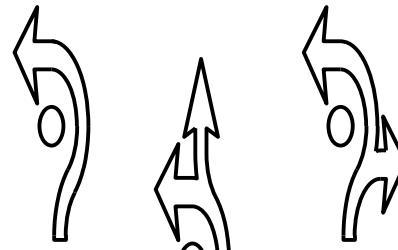
THE LABELED AREAS ABOVE CORRESPOND TO THE PORTIONS NEEDED FOR EACH TYPE OF ROUNABOUT TRAFFIC ARROW.

ALL ROUNABOUT ARROWS REQUIRE THE "COMMON", "C", AND "L" AREAS. ARROWS INCLUDING A THRU MOVEMENT ADDITIONALLY REQUIRE THE "T" AREA, AND ARROWS INCLUDING A RIGHT TURN MOVEMENT REQUIRE THE "R" AREA.

CENTER THE ARROW ON THE LANE.



LEFT  
ROUNABOUT  
ARROW



RIGHT &  
LEFT  
ROUNABOUT  
ARROW

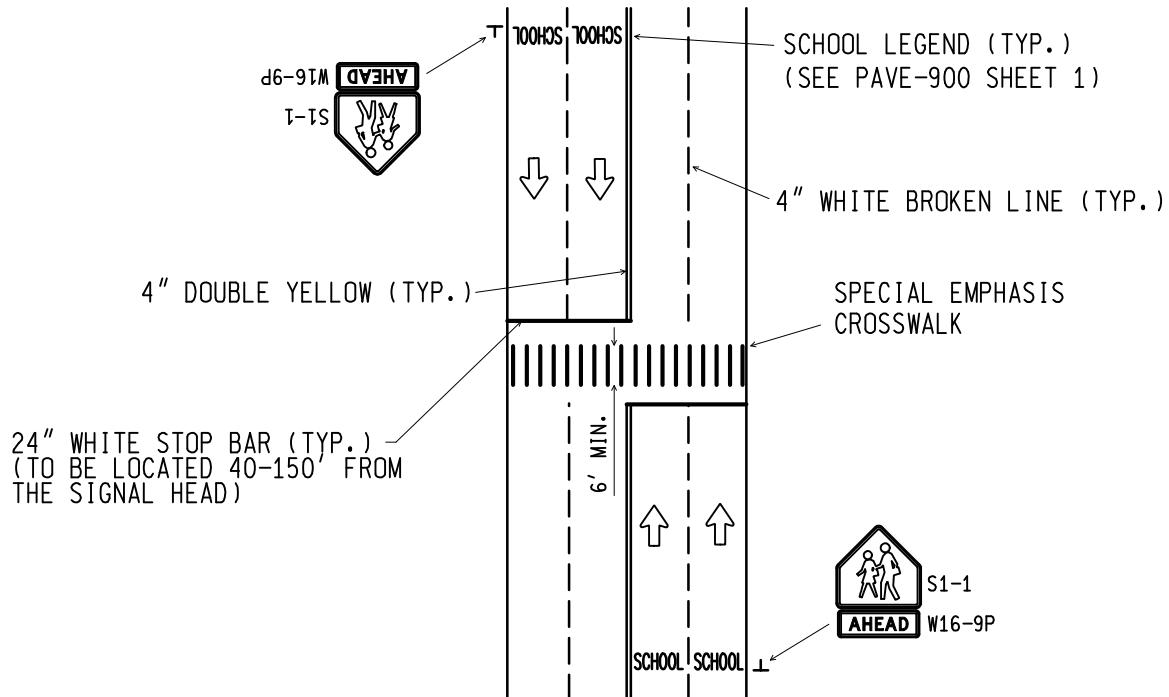


THRU &  
LEFT  
ROUNABOUT  
ARROW

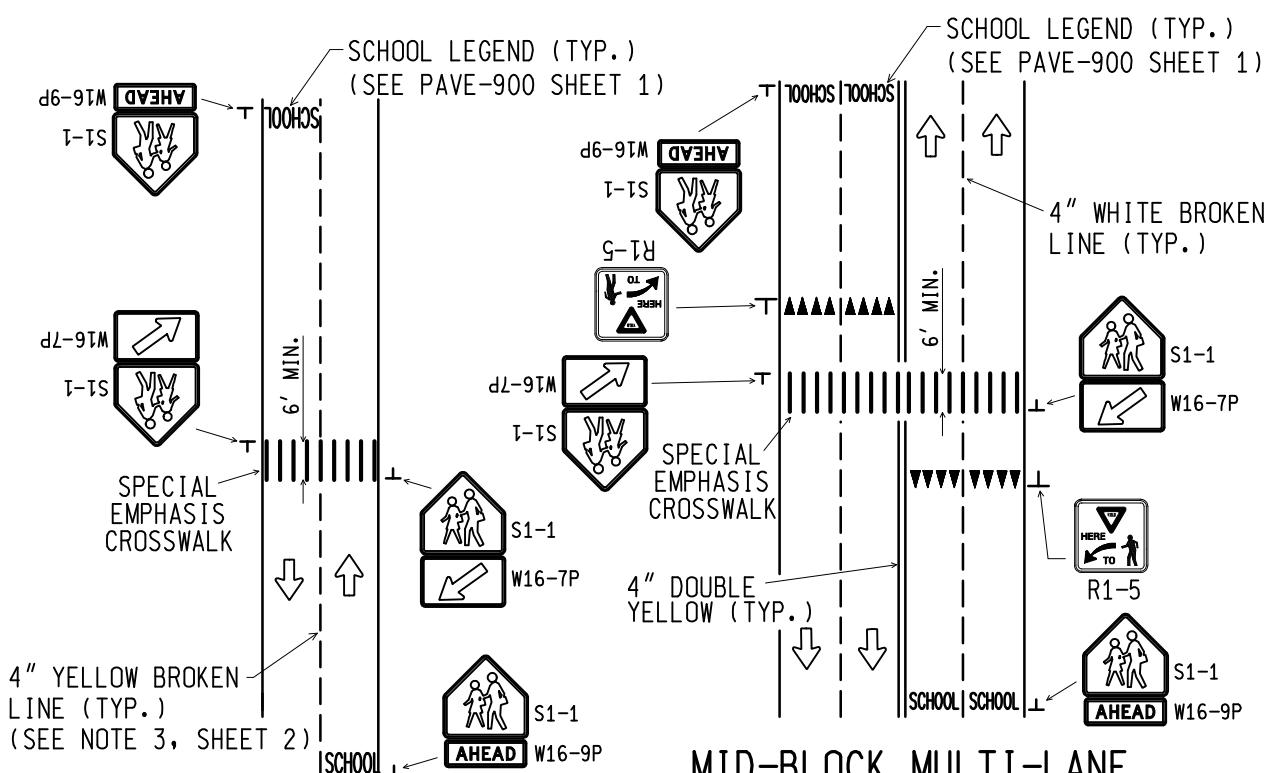


RIGHT &  
THRU &  
LEFT  
ROUNABOUT  
ARROW

NOT TO SCALE



MID-BLOCK SIGNALIZED SCHOOL CROSSING



MID-BLOCK NON-SIGNALIZED SCHOOL CROSSING

MID-BLOCK MULTI-LANE NON-SIGNALIZED SCHOOL CROSSING

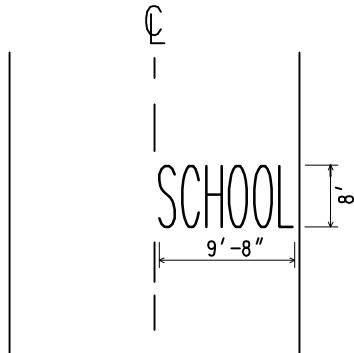
<b>MDOT</b> Michigan Department of Transportation	PREPARED BY DESIGN DIVISION
	APPROVED BY: <i>Randy V. Paulhus</i> DIRECTOR, BUREAU OF FIELD SERVICES
DRAWN BY: <u>LMF</u>	APPROVED BY: <i>Mark A. Van Paulhus</i> DIRECTOR, BUREAU OF HIGHWAY DEVELOPMENT
CHECKED BY: <u>JGM</u>	Page 132 of 1401/20/12 F.H.W.A. APPROVAL

DEPARTMENT DIRECTOR  
Kirk T. Steudle

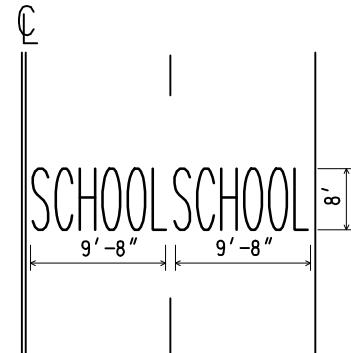
MICHIGAN DEPARTMENT OF TRANSPORTATION  
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

**SCHOOL MARKINGS**

SINGLE LANE APPROACH



MULTI LANE APPROACH

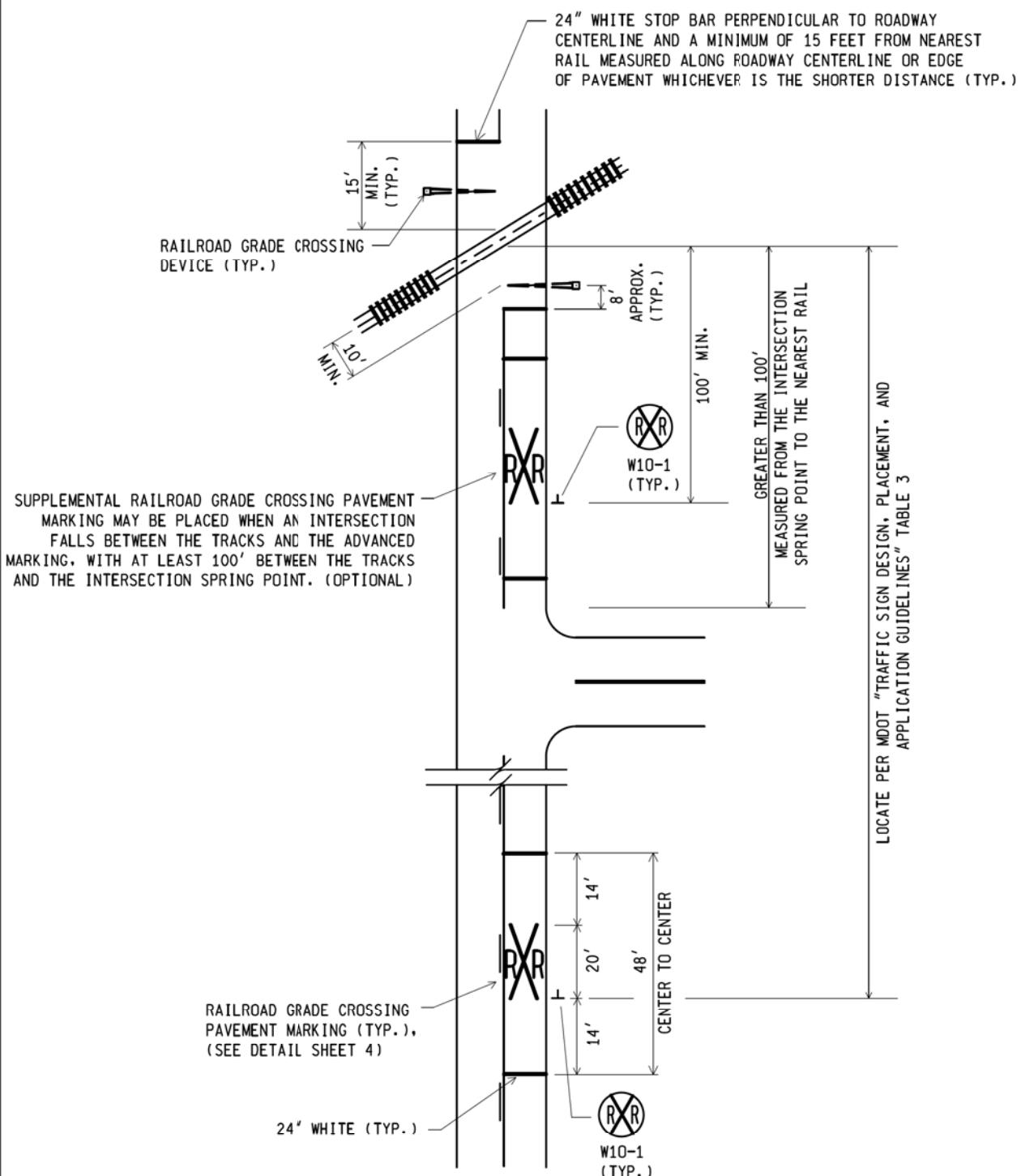


NOTES:

1. Place 9 ft 8 inch SCHOOL marking for each lane. Omit legend in left turn or exclusive right turn lanes.
2. Pavement marking should not extend over into opposing lane.
3. Pavement lane line markings (passing, no passing zone) per existing markings or as directed by the Engineer.
4. Refer to PAVE-945 for stop bar, crosswalk and yield line marking details.

NOT TO SCALE

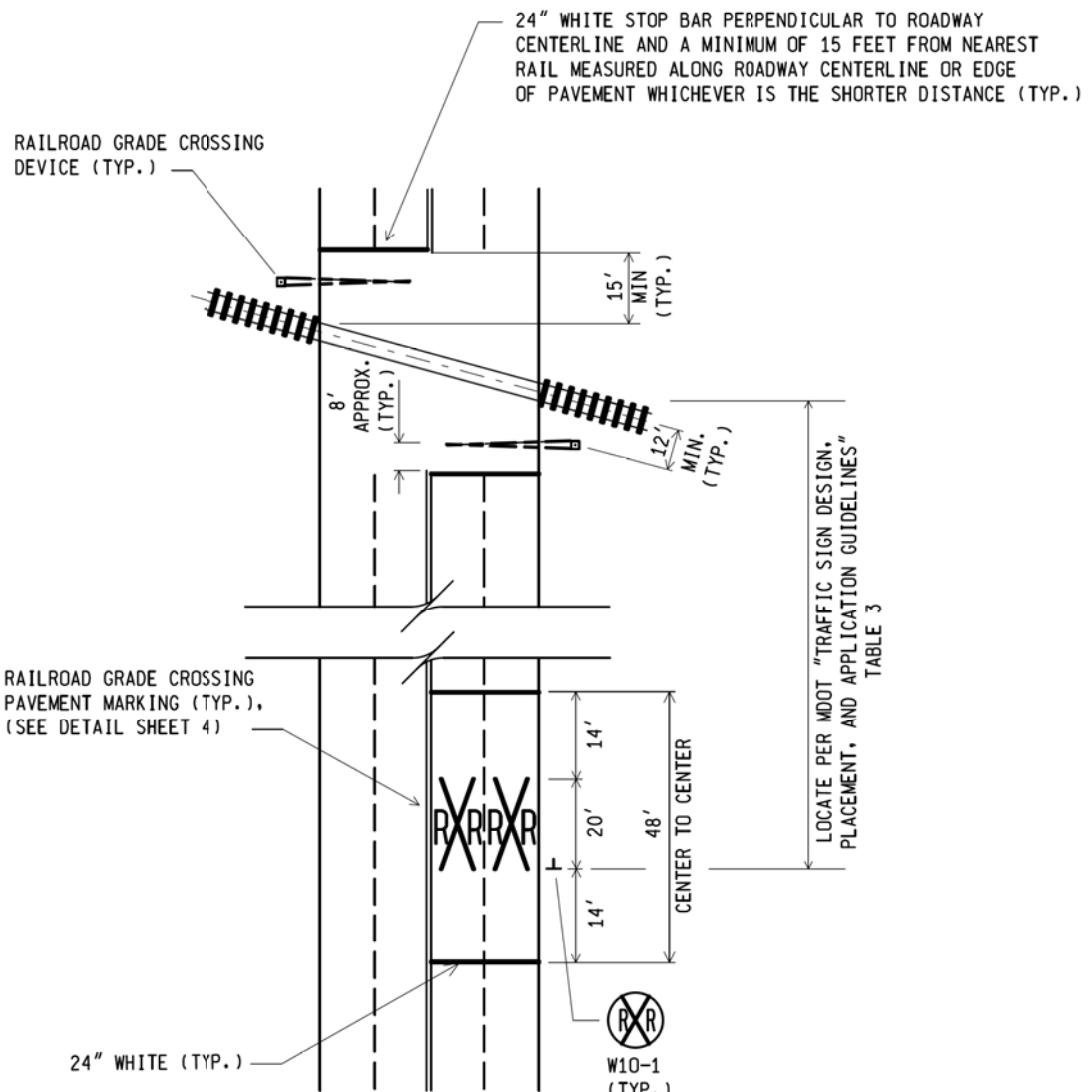
MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN	Page 133 of 149 F.H.W.A. APPROVAL	10/18/11 PLAN DATE	PAVE-960-B	SHEET 2 OF 2
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## RAILROAD CROSSING AT TWO LANE ROADWAY

(OBTUSE TRACK/ROADWAY ANGLE SHOWN)

<p>PREPARED BY DESIGN DIVISION</p> <p>DRAWN BY: <u>LMF</u></p> <p>CHECKED BY: <u>JGM</u></p>	<p>DEPARTMENT DIRECTOR Kirk T. Steudle</p> <p>APPROVED BY: <u>Kimberly Avery</u> DIRECTOR, BUREAU OF FIELD SERVICES</p> <p>APPROVED BY: <u>Bradley C. Wieferich</u> Bradley C. Wieferich 2017.09.24 18:29:01 -04'00'</p> <p>APPROVED BY: <u>F.H.W.A. APPROVAL</u></p>	<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR</p> <h3>RAILROAD GRADE CROSSING PAVEMENT MARKINGS</h3>		
		08/23/17	01/22/17	PAVE-965-D SHEET 1 OF 4

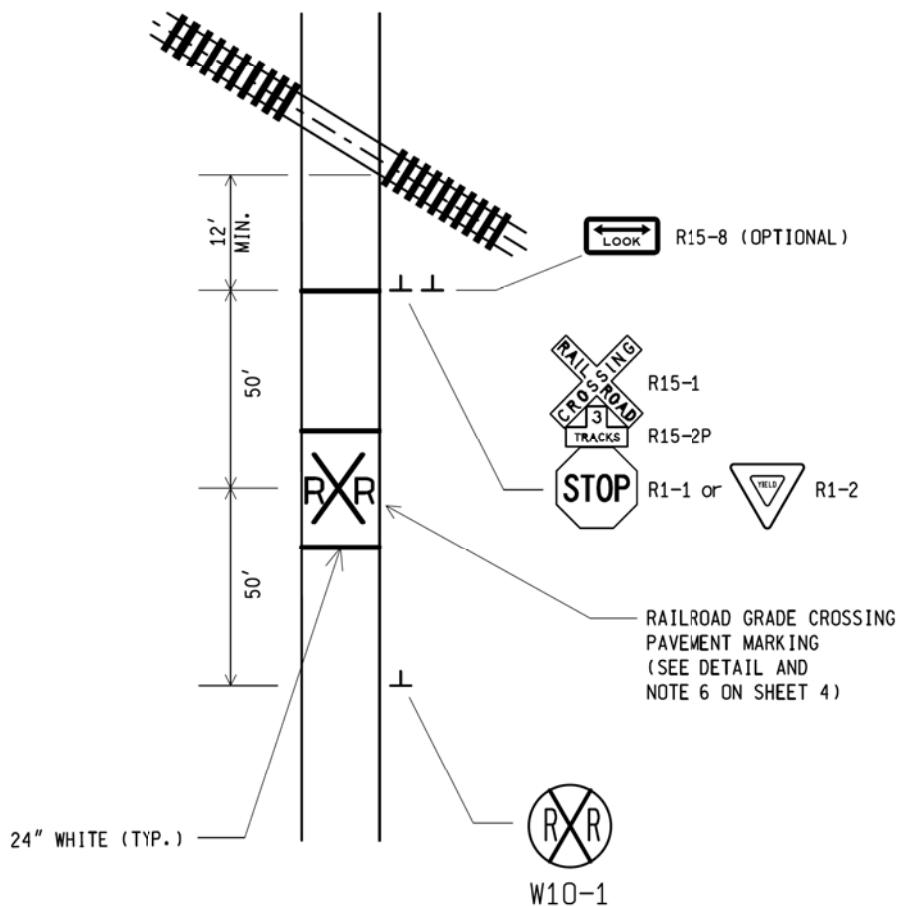


## RAILROAD CROSSING AT MULTI LANE ROADWAY

(ACUTE TRACK/ROADWAY ANGLE SHOWN)

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN	08/23/17 F.H.W.A. APPROVAL	01/22/17 PLAN DATE	PAVE-965-D SHEET 2 OF 4
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## RAILROAD CROSSING AT SHARED-USE PATH

(ACUTE TRACK/ROADWAY ANGLE SHOWN)

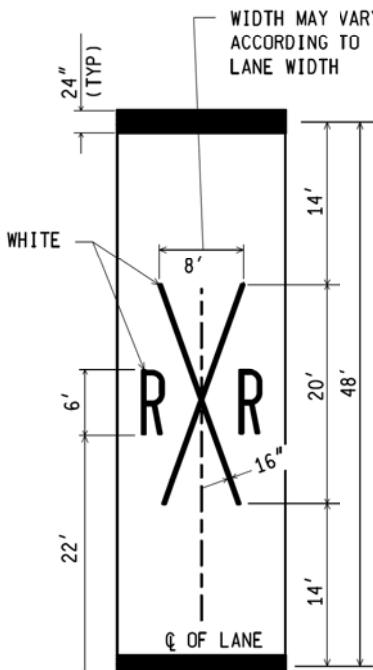
NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION  
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN

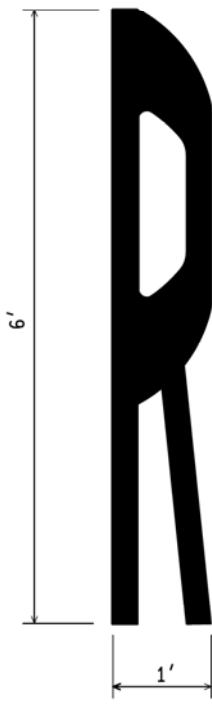
08/23/17  
F.H.W.A. APPROVAL

01/22/17  
PLAN DATE

PAVE-965-D  
SHEET  
3 OF 4



## CONVENTIONAL MARKINGS



### ALTERNATE MARKINGS

## NOTES:

1. This document shows active grade crossing devices on two lane and multi-lane roadways. If passive grade crossing devices (crossbucks) are present, the stop bar should be located at the crossbuck, but no closer than 15 feet from the nearest rail.
2. "R X R" pavement markings can be omitted for exclusive right turn lane locations. "R X R" pavement markings are optional for center lane left turn only lanes.
3. The alternate pavement markings may be specified at any grade crossing, but their use is particularly advantageous on roadways subjected to high traffic volumes, since they are designed to minimize the amount of markings applied in the wheel tracks, thereby extending marking life. Identical types of markings shall be installed on both roadway approaches.
4. The 24 inch transverse markings immediately above and below the "R X R" marking will be paid for separately.
5. See part 8 of the MMUTCD for criteria regarding the placement of solid yellow, no passing zone markings.
6. When placed on a shared-use path, reduce all vertical dimensions (except for stop bars) by half.
7. STOP or YIELD signs are only to be used at passive crossings.

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN		08/23/17 F.H.W.A. APPROVAL	01/22/17 PLAN DATE	PAVE-965-D	SHEET 4 OF 4
NOTE: THIS DRAWING IS SIGNED COPY. TO GET ORIGINAL DRAWING, GO TO THE MICHIGAN DEPARTMENT OF TRANSPORTATION WEBSITE.					

DELINATEATORS AT 100' SPACING  
YELLOW OR WHITE REFLECTORS  
(SEE NOTE 4 AND R-127 SERIES)



SEE MDOT "TRAFFIC SIGN DESIGN, PLACEMENT,  
AND APPLICATION GUIDELINES" TABLE 3

D  
50'  
D/4

MERGE ARROWS  
(SEE NOTE 1 AND  
PAVE-900 SERIES)

Notes:

1. Merge arrows are required when the speed limit is 45mph or greater. Where the speed limit is 40mph or less, merge arrows are optional.
2. The MERGE legend may be used to supplement, but not replace, the arrows. See PAVE-900 for spacing.
3. The Engineer may choose to place merge arrows in long acceleration lanes.
4. When the merging lane is an interior lane on a multilane roadway, omit delineators.
5. For shorter "D" distances, the first arrow may be moved upstream as far as 180 ft prior to the W4-2 sign at the direction of the Engineer to provide better spacing of the symbols.



PREPARED  
BY  
TSMO DIVISION

DRAWN BY: MKB

CHECKED BY: KMA

DEPARTMENT DIRECTOR  
Paul C. Ajegba

APPROVED BY: Gregg Brunner, P.E. Gregg Brunner  
Nov 2 2020 12:10 PM

DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: Bradley C. Wieferich Bradley C. Wieferich  
Nov 5 2020 5:53 PM

DIRECTOR, BUREAU OF DEVELOPMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION  
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

## LANE REDUCTION PAVEMENT MARKINGS

14909/21/20

F.H.W.A. APPROVAL

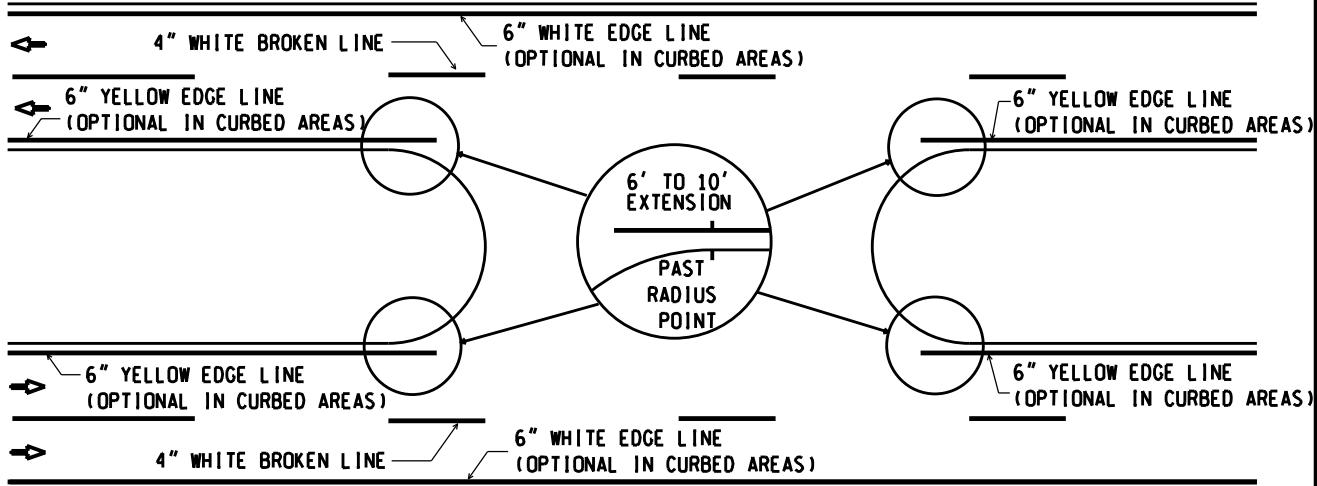
03/25/20

PLAN DATE

PAVE-971-B

SHEET  
1 OF 1

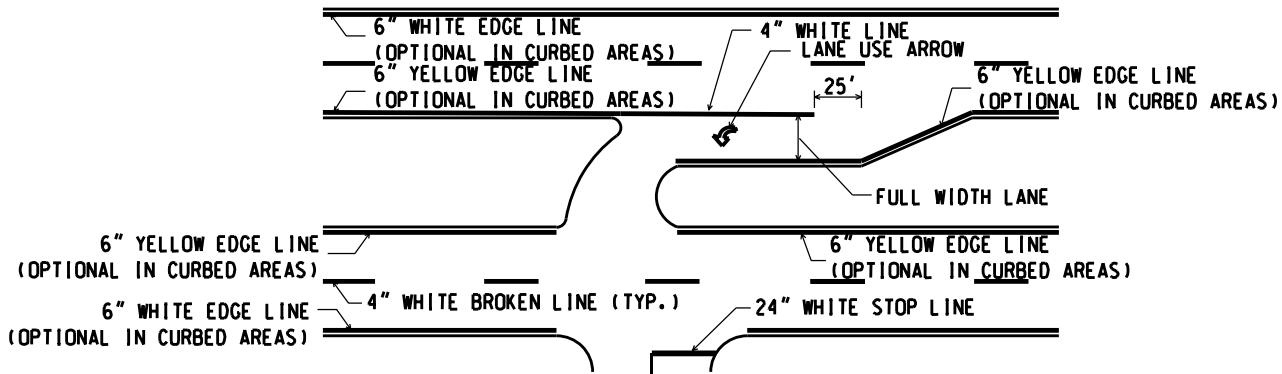
Page 138 of 149



## MEDIAN CROSS-OVER

### NOTES:

1. For "AUTHORIZED VEHICLES ONLY" crossovers, continue 6 inch yellow edgeline completely through crossover.

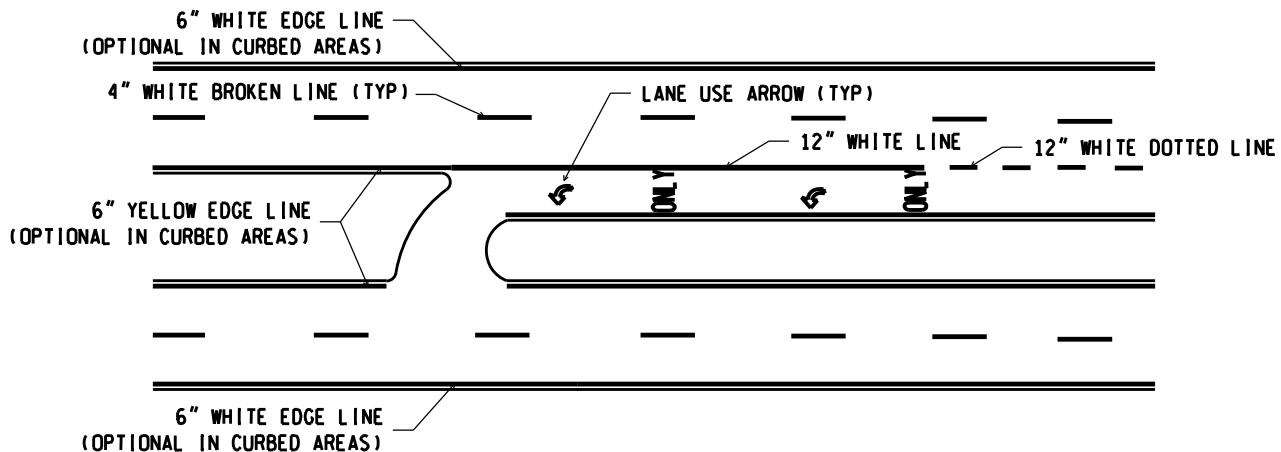


## DIRECTIONAL CROSS-OVER

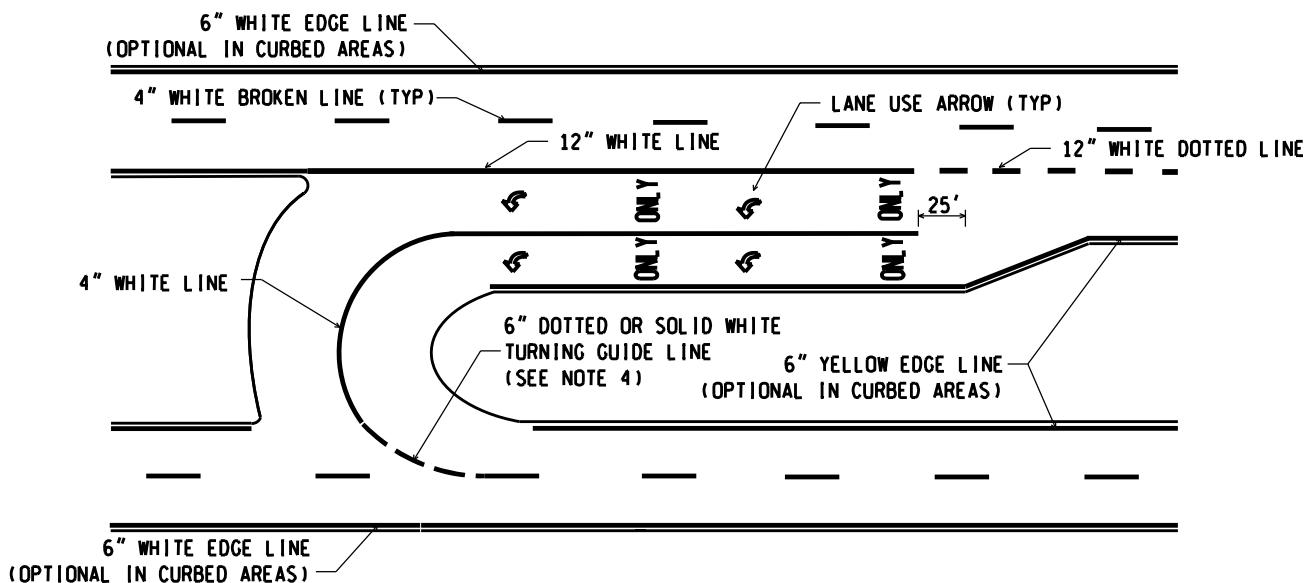
### NOTES:

1. Install arrow(s) as shown in PAVE-900 and PAVE-935. Omit arrow(s) if the lane is not full width in advance of the island or the channelizing marking is less than 75 ft in length.

 <p><b>PREPARED BY</b> TSMD DIVISION</p>	<p>DEPARTMENT DIRECTOR Paul C. Ajegba</p> <p>APPROVED BY: <u>Gregg Brunner, P.E.</u> Nov 2 2020 12:10 PM DIRECTOR, BUREAU OF FIELD SERVICES</p> <p>APPROVED BY: <u>Bradley C. Wieferich</u> Nov 5 2020 5:53 PM DIRECTOR, BUREAU OF DEVELOPMENT</p>	<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR</p> <p><b>CROSS-OVER PAVEMENT MARKINGS</b></p>
	<p>Page 139 of 140</p> <p>9/21/20</p> <p>F.H.W.A. APPROVAL</p>	<p>06/16/20</p> <p>PLAN DATE</p> <p>PAVE-985-E</p> <p>SHEET 1 OF 3</p>



## DIRECTIONAL CROSS-OVER WITH LANE DROP

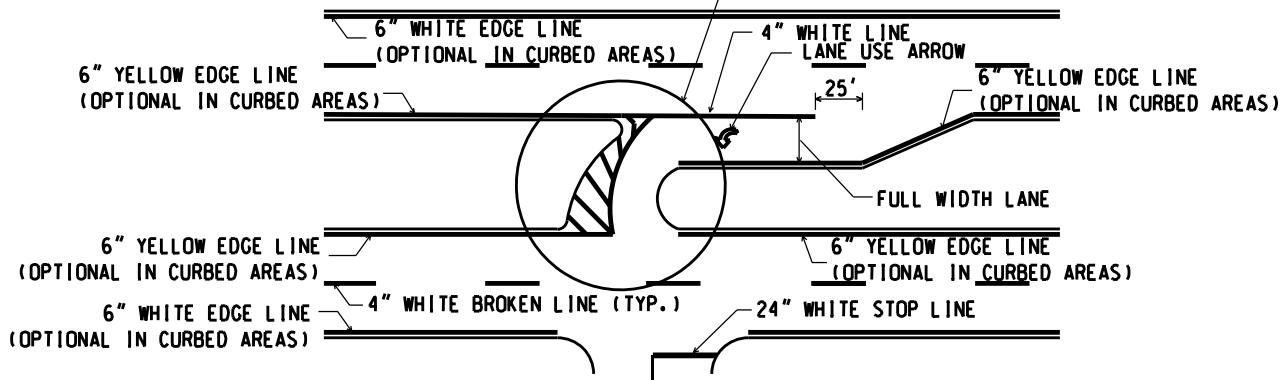
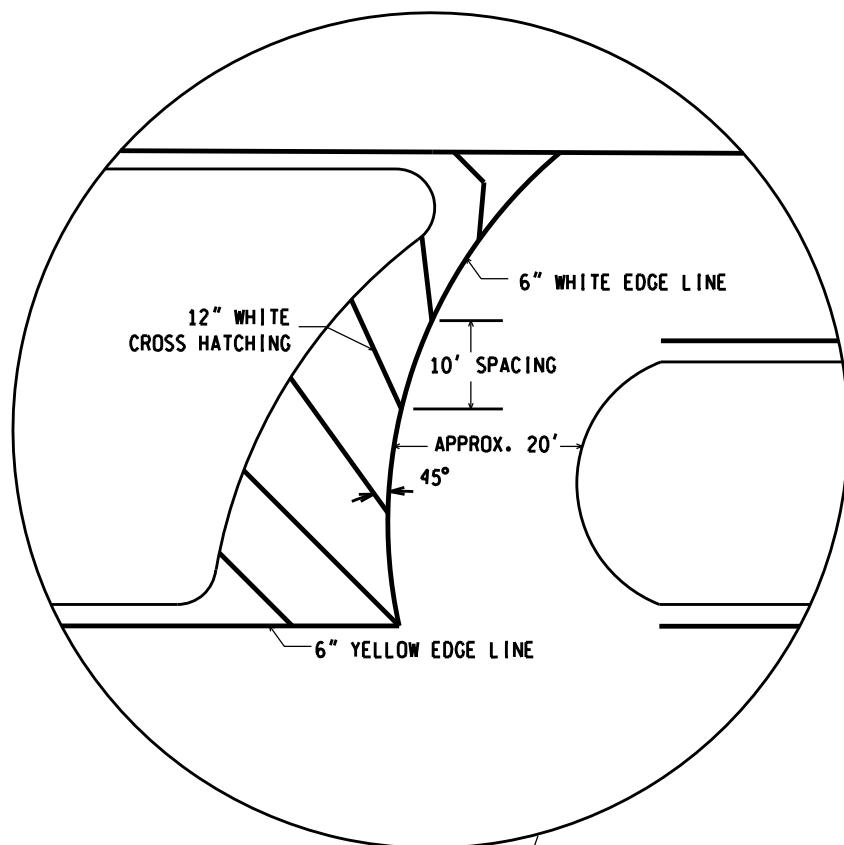


## DIRECTIONAL CROSS-OVER WITH DUAL LANES

### NOTES:

1. See PAVE-900 and PAVE-935 for location of special markings.
2. "ONLY" legends are not required when all crossover lanes are developed. If at least one crossover lane is a drop lane, then "ONLY" legends are required in addition to the arrows.
3. Include a dotted turning guideline for all double turn movements.
4. Evaluate road conditions when more than two receiving lanes are present to determine which lane the turning guide line should lead to (radius considerations, lanes dropping, etc.).

NOT TO SCALE



## CROSS HATCHING FOR WIDE SINGLE-LANE CROSS-OVERS

### NOTES:

1. See PAVE-900 and PAVE-935 for location of special markings.
2. "ONLY" legends are not required when all crossover lanes are developed. If at least one crossover lane is a drop lane, then "ONLY" legends are required in addition to the arrows.
3. Cross hatching is radial to always point upwards in the direction of traffic movement and maintain a 45 degree angle to the edgeline. 10 foot spacing is measured along the white edgeline.

NOT TO SCALE



*"Our mission is to upgrade and maintain  
a safe and efficient road system"*

## BID FORM

### PROJECT IDENTIFICATION:

GRAND TRAVERSE COUNTY ROAD COMMISSION

2024 Countywide Special Pavement Marking Program

CONTRACT #: 24E402

**OWNER PROJECT NUMBER: 23E402**

**Project Number**      **Location**

**24E402**                      **Various Locations**

### THIS BID IS SUBMITTED TO:

GRAND TRAVERSE COUNTY ROAD  
COMMISSION  
1881 LAFRANIER ROAD  
TRAVERSE CITY, MI 49696-8911

- 1.01 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with the Road Commission in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.
- 2.01 Bidder accepts all of the terms and conditions of the Advertisement or Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. The Bid will remain subject to acceptance and the prices guaranteed for 45 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of the Road Commission.
- 3.01 In submitting this Bid, Bidder represents, as set forth in the Agreement, that:
  - A. Bidder has examined and carefully studied the Bidding Documents, the other related data identified in the Bidding Documents, and the following Addenda, receipt of all which is hereby acknowledged.

**Addendum No.**      **Addendum Date**



*"Our mission is to upgrade and maintain  
a safe and efficient road system"*

- B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local and Site conditions, including subsurface conditions, that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with and is satisfied as to all federal, state and local laws, rules, and regulations that may affect cost, progress and performance of the Work.
- D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site which may have been provided, if any, and (2) reports and drawings of a Hazardous Environmental Condition, if any, which may have been provided.
- E. Bidder has obtained and carefully studied (or assumes responsibility for having done so) all additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the materials, means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific materials, means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents to be employed by Bidder, and safety precautions and programs incident thereto.
- F. Bidder does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.
- G. Bidder is aware of the general nature of work to be performed by the Road Commission and others at the Site that relates to the Work as indicated in the Bidding Documents.
- H. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents.
- I. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.



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- J. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.
- K. The Bidder understands that if it is the Successful Bidder, it is being selected by the Road commission to perform the Work because of Bidder's skill and expertise to perform the Work and Bidder specifically represents and agrees that it has the experience, knowledge, and competency necessary to perform the Work or oversee the performance of the Work and assumes the responsibility for the performance of the Work pursuant to the Contract documents and assumes the risk in performing the Work.

4.01 Bidder further represents that this Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any individual or entity to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over the Road Commission.

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

#### UNIT PRICE BID:

See included bid blank:

Unit Prices have been computed in accordance with the Instructions to Bidders.

Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities provided, determined as provided in the Contract Documents.

6.01 Bidder agrees that the Work will be substantially completed and completed and ready for final payment in accordance with the General Specifications on or before the dates or within the number of calendar days indicated in the Contract Documents.

7.01 Bidder accepts the provisions of the Contract as to liquidated damages in the event of failure to complete the Work within the times specified above, which shall be stated in the Contract.

8.01 The required Bid security is attached to and made a condition of this Bid.



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9.01 The terms used in this Bid with initial capital letters have the meanings indicated in the Bidding Documents.

SUBMITTED on \_\_\_\_\_, 20\_\_\_\_

*Note to Bidders - Complete only one of the following three sections as appropriate for your business status: individual, partnership or corporation.*

If Bidder is:

An Individual

Name (typed or printed): \_\_\_\_\_

By: \_\_\_\_\_  
(Individual's signature)

Doing business as: \_\_\_\_\_

Business Address: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax No.: \_\_\_\_\_

e-mail: \_\_\_\_\_

A Partnership

Name (typed or printed): \_\_\_\_\_

By: \_\_\_\_\_  
(Authorized Individual's signature)

Doing business as: \_\_\_\_\_

Business Address: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax No.: \_\_\_\_\_

e-mail: \_\_\_\_\_

A Corporation/Limited Liability Company/Professional Liability Company

GRAND TRAVERSE COUNTY ROAD COMMISSION  
24E402 2024 Countywide Special Pavement Marking Program  
PAGE 4 OF 5

BID FORM



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Name (typed or printed): \_\_\_\_\_

State of Formation \_\_\_\_\_

Type: \_\_\_\_\_

By \_\_\_\_\_  
(signature)

Name: \_\_\_\_\_  
(type or printed)

Title \_\_\_\_\_

Business Address: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax No.: \_\_\_\_\_

e-mail: \_\_\_\_\_

SHRR 2835890v1

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24E402 2024 Countywide Special Pavement Marking Program  
PAGE 5 OF 5

BID FORM



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BID BLANK

24E402

2024 Countywide Special Pavement Marking Program

Various Locations

Pay Item	Description	Quantity	Unit	Unit Price	Extended Price
1100001	Mobilization, Max, 5%	1	LSUM		\$ -
8110093	Pavt Mrkg, Polyurea, 6 inch, Crosswalk	696	Ft		\$ -
8110110	Pavt Mrkg, Polyurea, 12 inch, Crosswalk	1,448.00	Ft		\$ -
8110114	Pavt Mrkg, Polyurea, 24 inch, Stop Bar	482	Ft		
8110198	Pavt Mrkg, Thermopl, 6 inch, White	60	Ft		\$ -
8110343	Rem Spec Mrkg	1,182.00	Sft		\$ -
8110405	Pavt Mrkg, Polyurea, Lt Turn Arrow Sym	9	Ea		\$ -
8110410	Pavt Mrkg, Polyurea, Only	2	Ea		\$ -
8110411	Pavt Mrkg, Polyurea, Railroad Sym	8	Ea		\$ -
8110412	Pavt Mrkg, Polyurea, Rt Turn Arrow Sym	9	Ea		\$ -
8110414	Pavt Mrkg, Polyurea, School	2	Ea		\$ -
8110417	Pavt Mrkg, Polyurea, Thru and Rt Turn Arrow Sym	2	Ea		\$ -
8110450	Recessing Pavt Mrkg, Longit	29,910.00	Ft		\$ -
8110451	Recessing Pavt Mrkg, Transv	2,508.00	Sft		\$ -
8112114	Pavt Mrkg, Wet Reflective Polyurea, 4 inch, White	28,601.00	Ft		\$ -
8112117	Pavt Mrkg, Wet Reflective Polyurea, 4 inch, Yellow	57,888.00	Ft		\$ -
8112159	Scarification, for Polyurea Spec Mrkg	1,800.00	Sft		\$ -
8127051	Temporary Traffic Control	1	LSUM		\$ -



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Contract Total Amount (Words): \_\_\_\_\_

Contract Total Amount (Number): \$ \_\_\_\_\_ -

Contractor \_\_\_\_\_ Name \_\_\_\_\_ Date \_\_\_\_\_

## **AFFIDAVIT OF NON-COLLUSION BY CONTRACTOR**

STATE OF MICHIGAN )  
 )  
COUNTY OF \_\_\_\_\_ )

I, \_\_\_\_\_, the \_\_\_\_\_ of \_\_\_\_\_, state:

1. That I have submitted a bid to the Grand Traverse County Road Commission.
2. That the bid was not made in the interest of or on behalf of any undisclosed person, partnership, company, association, organization, or corporation.
3. That the bid is genuine and not collusive or a sham.
4. That I have not directly or indirectly by agreement, communication, or conference with anyone, attempted to induce action prejudicial to the interest of the Grand Traverse County Road Commission or of any other bidder, or anyone else interested in the proposed contract.
5. That prior to the public opening and reading of the bids, I:
  - a. Did not directly or indirectly induce or solicit anyone else to submit a false or sham bid.
  - b. Did not directly or indirectly collude, conspire, connive, or agree with anyone else that I or anyone would submit a false or sham bid or that anyone should refrain from bidding or withdraw a bid.
  - c. Did not, in any manner, directly or indirectly, seek by agreement, communication, or conference with anyone to raise or fix the bid of said bidder or of anyone else or to raise or fix any overhead, profit, or cost element of a bid price of that of anyone else.
  - d. Did not, directly or indirectly, submit a bid price or any breakdown thereof, or the contents thereof, or divulge information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof or to any individual or group of individuals, except to any person or persons who have a partnership or other financial interest with me in my business.

Its: \_\_\_\_\_

Subscribed and sworn to before me this \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

Notary Public \_\_\_\_\_ Co., MI  
Acting in \_\_\_\_\_ Co., MI  
My Commission Expires: \_\_\_\_\_